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LIEUT.-COLONEL P. J. SIMPSON, D.S.O., T.D., J.P., F.R.C.V.S., PRESIDENT, N.V.M.A., 1931.

The election of Lieut.-Colonel Percy J. Simpson, D.S.O., T.D., J.P., F.R.C.V.S., as President of the National Veterinary Medical Association for the remainder of the current year, is one which will commend itself to all members of the profession. No more appropriate tribute to the work which he has done for the profession as a whole and for the " National " in particular could be made and it is difficult to imagine a man more fitted for the onerous duties devolving upon the President of the Association.

The son of the late J. F. Simpson, Esq., J.P., F.R.C.V.S., who for many years carried on an extensive practice in Maidenhead and the district, Colonel Simpson, from his earliest boyhood, was inculcated with the principles of veterinary medicine. Its difficulties, always appreciated, never caused him unnecessary worry, for his cheery optimism, one of the chief traits in his personality, refused to allow mournfulness to take a place in his daily work.

Our President received his early education at Maidenhead College and at Reading School, and on leaving the last-named he entered the Royal Veterinary College, Camden Town. In 1899 he gained his diploma after a highly distinguished college career, during which he obtained second-class honours in the final year.

Looking back on the period which has elapsed since he received his diploma, it can fairly be said that his life has been a full one. His detestation of idleness, of hypocrisy, or of anything which has not for its object something useful, his strict integrity as well as his wide knowledge of men has culminated in a career and a reputation of which anyone could be proud. Doubtless the guiding influence of that grand old gentleman, his father, whose death was such a loss to the profession, had a good deal to do with what is now the finished product, but it must be said that the son proved a very apt pupil.

For some years after Colonel Simpson's qualification he practised with his father at Maidenhead; in fact, until the outbreak of war when, having been an ardent yeoman since 1899 (when he first joined the Berkshire Yeomanry as Veterinary Lieutenant) he joined his regiment and was soon sent overseas. He remained overseas, doing duty both in Egypt and Palestine for some four years and received promotion to the rank of Major when he was appointed to the command of the 21st Veterinary Hospital at Belbeis. Some two years later he was appointed A.D.V.S. of the 21st Corps with the rank of Lieut.-Colonel and still later received that much coveted, yet well deserved distinction, the D.S.O. He was known practically all over Egypt, not only as a good and competent officer but as one who was always ready to help the " lame dog " and ever willing to hear both sides of the question. In 1917 Colonel Simpson was mentioned in despatches and received the T.D. decoration. On returning home in 1918 he commanded the Wessex Veterinary Hospital at Romsey and after a time was released from military duty and returned to civil life.

Our President's activities at home are well known to most members of the "National." He has been a member of the Royal Counties Division ever since he qualified, having acted variously as President and also as Hon. Secretary for a continuous period of 25 years. He is also a member of the Southern Counties Division and is a life Fellow of the Central Division, of which Society he has also been President.

Colonel Simpson is a member of Council both of the R.C.V.S. and of the " National," but the work for which he has been responsible in connection with these bodies is only known to those who have been privileged to work with him. The greater part of the work of these Councils is carried out in Committee and it is on these that Colonel Simpson has served us so well. His large business experience, as well as his wide knowledge of men, has been evident in the wise decisions for which he has largely been responsible when acting as Chairman of the various Committees, in particular, of the Finance and General Purposes Committee, in which capacity he serves both the R.C.V.S. and the N.V.M.A.

Colonel Simpson has been Hon. Secretary of the Victoria Veterinary Benevolent Fund for many years and it is common knowledge that his occupancy of this important post has been no sinecure and that he has taken his duties seriously. No single man has done so much for this deserving cause as has our newly-elected President. His many personal visits to deserving cases, the long discussions at Red Lion Square as to how best the strained resources of the Fund could be distributed, have taken much of his valuable time. Everyone is well aware of his prowess as an amateur actor. This pastime is one of his chief relaxations, but even this has not prevented him from turning it to good account for the profession which he loves so well. Many times he and his

willing and talented colleagues of the Maidenhead Amateur Dramatic Society have organised performances in London and elsewhere for the Fund, which have been instrumental in bringing to its coffers no less a sum than £230. In this connection it would be ungallant and unfair if one failed to make mention of Mrs. Simpson, whose heart, like that of her husband, is with the profession. Not one of these performances has been organised in which Mrs. Simpson has not taken a very active part in its production, and one is lost in admiration when one thinks of the many weary hours spent at all hours of the night in order to ensure that only the very best possible result would accrue.

In civil life Colonel Simpson has also many and varied activities, for, apart from having been a Councillor of the Borough of Maidenhead and the County Council of Berkshire, he is a J.P. for the County and a Director of several local companies. He has acted as Referee at the Dublin Horse Show, Examiner to the Royal Sanitary Institute, and Inspector to the Ministry of Agriculture.

His son, Mr. J. F. Simpson, recently obtained his F.R.C.S. and is now practising as an ear, nose and throat surgeon in Harley Street.

With all these activities one would think that our President's time was sufficiently occupied, but apparently his desire for work is insatiable. We echo the sentiments of all members of the profession when we wish him a happy and successful term of office, and we express the hope and the conviction that he will receive the support of a large and representative assembly when the Congress meets at Norwich this year.

G. W. D.

Raw and Heated Milk in Nutrition.

Experiments on rats to discover whether the heating of milk caused the destruction of factors which were essential to continued growth and development of the animal organism through successive generations are described by E. C. V. Mattick and J. Golding in the *Lancet*, March 21st, 1931, page 662. At the beginning of the series raw milk was compared with sterilised milk, but later on, when the method had been stabilised, comparative tests were made with pasteurised milk. It was found that raw milk with biscuit made from flour and water only was capable of sustaining the growth and reproduction of rats, and a fourth generation on this diet proved as healthy as previous generations. In similar conditions sterilised milk failed to sustain life and reproduction beyond the first generation except in one instance, when a second generation of very stunted animals was produced. Even the first generation, *i.e.*, the original rats, failed in many cases to reach maturity. With pasteurised milk, preliminary experiments gave results sufficiently marked to indicate that milk heated to 145°-149° F. for half-an-hour had undergone changes which considerably reduced its dietetic value. A further communication will deal with the factors which are destroyed, but the authors suggest that partial destruction of vitamin B might be included.

Gland Grafting and its Economic Value.*

By G. P. Male, M.R.C.V.S., Reading.

It is about three years since I promised your Hon. Secretary to read a paper on Gland Grafting. One reason for the delay was inability owing to the pressure of other duties, and, secondly, I felt that the longer it was delayed the better able I should be to complete the histories of many of my cases and to give you a more reasoned estimate of its value.

I do not propose to-night to discuss at any length the history of gland transference nor the vexed question of the source of the internal secretions of the testicle and ovary, nor do I intend to argue how long the glands, when transferred, remain in the tissues in a living condition. On all these points there is such a difference of opinion that I think it is far more helpful to describe some of the more typical cases which I have operated upon and which I have been able to follow up and observe, leaving you to judge by the results. Facts being better than theories, it is only by the accumulation of these facts and by comparing results that one can arrive at any definite conclusion.

For the benefit of those who have not gone very deeply into the question it would perhaps be well to give a very brief summary of the investigations made and conclusions arrived at.

The first attempt at gland grafting was made on fowl by John Hunter about 1767, but it was not until 1849 that Berthold made the first conclusive experiments by removing the testicles of fowls and then implanting other testicles.

These experiments were followed by those of Pezard, but it is only comparatively recently that there have been published the investigations of Steinach, Sand, Lipschütz, Voronoff, Moore, Lydston, Lichtenstein in Vienna, Muchsam in Berlin, Marshall of Cambridge, and many others.

Steinach's researches were chiefly in connection with rats and guinea-pigs, and are well known.

He discovered that the sex of the animal always responded to the sex of the generative gland; that the female implanted with the male gland will be a male with all its characteristics and that the male implanted with a female generative gland will develop into a full-fledged female.

By implanting a male and female generative gland simultaneously into the body of an animal, hybrids will be produced; in fact, he succeeded in bringing about all the intermediate stages between male and female.

The castrated animals develop the lost male characteristics after the graft has become vascularised and recovered its endocrine functions. The effects are manifested not only in external characters but also in behaviour, the animals becoming vigorous and combative; they are attracted by the female and are not repelled by her as are castrated animals.

If the graft is made in aged animals in which the

* Paper presented to the Central Division, N.V.M.A., at 10, Red Lion Square, on April 2nd, 1931.

testicles are still present but have become inactive, especially if taken from a young animal of the same species, the host in the course of a few weeks or months becomes completely transformed and rejuvenated; many of the symptoms of senility disappear and are replaced by those of youth and vigour. The sexual instincts which had disappeared are recovered; the animal seeks and may successfully impregnate the female. In the case of aged females into which ovaries have been transplanted, they also become rejuvenated, their ovaries recover their lost functions, œstrum re-occurs and pregnancy may result.

Voronoff claims that young animals, not castrated, when grafted show increased development of the masculine secondary sex characters, grow faster and are more vigorous.

He and others have also applied the same principle to man to combat the symptoms of senility and they found that portions of testicle from young anthropoid apes will "take" in man if implanted in the tunica vaginalis and will survive there for a long period.

Experiments proved that it is not necessary to reinstate a detached gland in the same spot from which it was removed, but that it will live in any situation in which it can be properly nourished. Even the eye from a toad can be grafted on to the skin of the neck. The implanted gland will then pour its secretion into the blood stream with resulting stimulating effects.

It has also been shown that the transplanted gland changes in composition; the greater part of the sensitive generative tissue being destroyed, the interstitial tissue survives, often hypertrophies, and it is this interstitial tissue, called by Steinach the "Puberty Gland," which secretes a chemical substance or hormone to which the stimulating effects are due.

Owing to the difficulty in finding sufficient material in the human subject, both in the case of males and females, Steinach conceived the idea of producing the same results by ligation or resection of the vas deferens of one side or later on, if necessary, of both sides. The damming back of the semen produces a degeneration of the spermatic tissue and an hypertrophy of the interstitial cells with a consequent increase in the output of hormone.

Many experiments have been carried out in both animals and man with successful results but, unfortunately, it cannot be applied to females and is not so applicable in animals for breeding purposes as in man for purely rejuvenating results.

Brown-Sequard many years ago claimed by experiments on himself that the subcutaneous injection of emulsions of testicular substance from animals was able to restore him, at the age of 72, to increased vitality with marked improvement of mental and physical powers.

Unfortunately, the effects of injections cannot be expected to last more than a few hours or days and must be frequently renewed, also the evidence with regard to injections and feeding experiments is not very conclusive; hence the resort to grafts which have a continuous effect while the graft lasts.

The cases to be placed before you are possibly unique, in this country at any rate, with regard to the number of different species operated upon and the variety of conditions for which the operation was performed.

At first I was quite prepared to expect no tangible results, but I was so impressed with the success of my earlier experiments that I continued them whenever opportunity offered in my practice, so that the cases have in no sense been picked and one has been able to come to very definite conclusions.

1. That all the domesticated animals on which I have operated are suitable subjects for grafting and that the grafts will take in all of them. (I have not tried in the case of the cat).

2. That it is not necessary to implant the graft on the testicle or ovary to get results, but that it will "take" in any position where it is protected from injury and can obtain sufficient nourishment.

3. Aged male animals show marked signs of increased vitality and youth, with a return to their normal powers of reproduction.

4. Male animals that for some reason, such as an injury to the testicle or other cause, are unable to procreate have been made fertile.

5. Female animals that have lost their powers of reproduction again resume these functions and produce healthy offspring.

6. As an economic factor grafting should prove of great importance to breeders.

I have made no attempt to operate on immature male animals for the purpose of producing early maturity or, in the case of rams, increased wool or meat, as this did not seem to offer very great economic value in this country. The claims made by Voronoff in this respect were not sufficiently convincing to warrant the extensive experimentation necessary to prove or disprove his contentions, especially in view of the findings of the delegation of scientific experts sent out by this country to investigate his claims; also, the experiments recently carried out in South Africa and Australia are not very conclusive.

Voronoff's operation, so ably described by Mr. Miller (one of the delegates), consists in implanting cut sections of testicle on to the tunica vaginalis of the host. It is one the technique of which entails considerable experience and skill and is not unattended with risk to the animal, as has been shown by the results of his experiments on two aged stallions and in the case of a boar operated upon in this country (the only case recorded, I believe).

Especially is there danger with aged rams and bulls which have to be placed in a dorsal position for some length of time. Again, if sepsis occurs the testicles may be permanently injured, which, in the case of young stallions, for example, would be much too risky a procedure and one I should not advise in these animals. Nor would it appear to be necessary, if the graft will "take" when implanted in other situations and produce the hormone, which, circulating in the blood stream, brings about its rejuvenating effects irrespective of the site of implantation.

His operation entails casting the animal, whereas, with the alternative method, the operation can be performed standing, a great advantage in aged animals of the larger breeds.

In the cases to be described I have selected types to show the diverse reasons for the operation in different species of animals.

It would be impossible, in the time at my disposal, to give details of all of them and, unfortunately, in some cases it has been impossible to obtain subsequent histories.

Cases.

1. *A Sealyham bitch,* the property of Mr. H———, about six years old. Had two litters of puppies, then failed to breed, although mated three times to different dogs during a period of two years and, finally, there was absence of œstrum.

The bitch was very fat and lethargic and showed all the signs of advancing age.

The grafting operation was performed under a general anæsthetic, two complete ovaries being implanted, one on each side of the flank, the donor being a fawn whippet bitch about 12 months old.

The wounds healed by first intention, though there was some swelling.

In a few months she showed marked alterations both physically and temperamentally. She lost much of her fat, became more lively, began to play with other dogs and run round in circles as she had done when quite a young bitch; in fact, the owner thought she was imitating the whippet which provided the graft.

She had a normal heat, was mated and had three strong, well-marked puppies. Œstrum returned at the normal time, but the owner did not breed from her again.

2.—*A Black Retriever bitch,* eight years old, the property of Major M———. Had previously had five litters of puppies, but had been barren two years. She was grafted under a general anæsthetic, the donor of the grafts being a white terrier bitch, and was mated at the first heat after the operation.

The wounds healed well, there was no discharge and no irritation, though there was some swelling for about ten days. Five black sound puppies were produced.

3.—*Red Pekingese bitch,* the property of Miss De P———, nearly nine years old, with the following breeding record: 1924, four puppies and one puppy; 1925, three puppies; 1926, two weaklings died at birth, then missed three seasons. Was grafted July, 1928—mated September, 1928—produced "one glorious puppy, big and strong." The owner says in a letter "She certainly is a different dog since this operation and at times is most young and frisky." She put on flesh, lost much of the greyness of the muzzle and became like a bitch years younger.

She was then given to a friend, who did not go in for breeding, and is still alive.

The donor was a small white terrier; a local anæsthetic was used and the grafts took well, although there was some irritation of the operation site for some days. This bitch was exhibited at the Royal Counties Veterinary Association meeting in 1929 and remains of the graft could still be felt.

4.—*Fawn Pekingese bitch,* the property of Miss De P———. Had previously had two litters of one each, at yearly intervals, as she only came into season once a year. After the grafting she came in season at the six months; six weeks after the operation she was mated and produced three strong puppies. The owner's comment reads "Needless to say we were all very delighted."

5.—*Fox Terrier bitch,* owner, Mr. T——. This animal was a very valuable stud bitch and had bred a champion. There were three previous litters, the last born January 3rd, 1926. She had three more heats but had bred no more puppies althought mated twice. She was grafted in January, 1928, in the flanks, with two whole ovaries from a two-year-old bitch, which took nicely; was mated in March and produced three puppies, which the owner reported "had to be taken away from her, but one very good one was reared who now has four puppies, and but for this the line tail female would have been extinct."

"She was not bred from again as she had such a bad time, and was given away, though she has been in season several times since."

There are many more cases I could quote on bitches but they are sufficient, I think, to demonstrate the usefulness of the operation. Only one bitch operated upon to date failed to respond to the grafting.

Mares have been equally successful and I would like to give you the histories of two.

1.—*Brown Thoroughbred mare,* S———, by Swynford, nine years old. 1923, had bay colt foal; 1924, a brown filly foal; 1925, 1926, 1927 and 1928 barren to four different sires; 1928, grafted; 1929, chestnut filly foal.

During the four years she was barren every effort was made to produce a foal by means of irrigations, inseminations, etc., but without result.

Grafting was tried as a last resort, a strong healthy foal being produced, which, at two years old, is one of the most promising in the stud.

The operation was performed on March 14th, 1928, in the standing position, by means of a local anæsthetic, one whole ovary being implanted in the side of the neck and one in the breast.

The donor was a half-bred piebald mare, three years old. Some local swelling occurred after a few days, but there was no pus formation or discharge and seven days after the sutures were removed.

Probably owing to the movement of the leg or possibly to interference by the mare, the wound on the breast opened and became infected. I therefore decided to remove the graft, but adhesions and vascularisations had already taken place and it was impossible to do this without the help of a scalpel, although great force was used, so it was allowed to remain and gradually it became detached.

There was no trouble with the other ovary.

1930.—This mare was again barren; in fact, she did not come in season at all, but, she being at a stud some distance away, I was unable to examine her until late in 1930, when I found the womb was abnormal, the *os* dilated and the uterus the subject of a metritis. Treatment was adopted for the latter and she was again grafted in January, 1931, when there was no sign of the original graft.

It is too early yet, of course, to say what is the result.

2.—*Brown Thoroughbred mare,* N———, 15 years old. Had seven foals and was empty 1926, 1927 and 1928, to Gainsborough and Salmon Trout.

1929.—Grafted and produced a brown filly foal, strong and healthy.

Other treatments for sterility had also been applied in this case without result.

The ovaries of a bay half-bred mare, three years old, were used and the operation was carried out as in the previous case, except that both ovaries were placed in the neck,

one on each side. Healing was uneventful, but the sutures were allowed to remain in for a fortnight.

1930.—This mare was again barren, but went to stud very late and was only covered once. When examined on her return she was found to have a catarrhal metritis and the ovaries were abnormally hard and cirrhous.

1931.—Grafted again on January 2nd. When signs of the original graft could be felt.

Grafting operations on cows have been disappointing, but they were only undertaken as a last resort and in some cases the ovaries had been manipulated and squeezed by cowmen and others so many times that one could hardly wonder at them being barren. In other cases all sorts of pessaries, some very corrosive, and all sorts of injections, had been tried, so that one was attempting almost the impossible.

One has also to take into consideration the fact that sterility in cows is so often the secondary result of contagious abortion and that the great majority of cases are due to a chronic metritis. Other methods than grafting have therefore been much more successful in my hands; in fact, I find that the majority of barren cows and heifers can be brought into productivity by appropriate treatment which I must not enter into here.

Ewes and sows are usually not of sufficient value to warrant the grafting operation, but with rams, boars, bulls, dogs and stallions that cannot procreate either from old age, overwork, injury or some other cause, the operation is certainly an economic proposition, especially those animals that have produced stock of value for racing or showing. I propose, therefore, to give a few typical examples where operation is indicated.

1.—*The Pedigree ram,* H—— D——, six years old, a noted sire of prizewinning lambs, whose progeny were making record prices at the sales. This ram began to lose vigour and finally he only begot three lambs during the season, although his genital organs appeared to be normal.

The grafting operation was advised and carried out in July, 1927, in the presence of Professor C. S. Plumb and Professor W. L. Henning, who happened to be on a visit from U.S.A.

The ram, having been previously fasted, was placed on his side on the operating table, a local anæsthetic being used.

A whole testicle from a young ram six months old was implanted in each flank. The wound healed and the graft took well on one side but on the other side, owing probably to the size of the testicle and the pressure, the skin gave way after some days, exposing the graft, which eventually became detached.

As to the result, I will quote from a letter received from the owner, Major J—, dated March 3rd, 1931. "H—— D—— only died a few months ago. The result has been most satisfactory. He was not used the first year owing to the obstinacy of the shepherd, but he has produced a large number of lambs each year since, including the present lambing season. The numbers of lambs sired are 1928, 13 lambs; 1929, 10 lambs; 1930, 36 lambs; 1931, 48 lambs. It will be noticed there was no diminution of virility, but rather an increase, judged by the number of lambs produced."

I operated upon another very old ram the same day under protest, as he was so weak that he could scarcely stand. He died a short time after the operation as was to be expected.

2.—*Pedigree Red Poll bull,* the property of Major M——, about 2½ years old, that had an injury to one testicle and, as a consequence, lost his virility and was unable to procreate. The operation was carried out in the standing position, a local anæsthetic being used.

Half a testicle from a young bull was implanted in each side of the neck and in a few months he was used again for service with successful results; he then being sold, I lost trace of him.

3.—*Pedigree Berkshire boar,* the property of the R—— C——, about two years old, the litter brother of a champion boar and therefore very valuable for breeding.

He would serve the sows, but could beget no pigs, being tried for some considerable time with no result.

Material for the graft was obtained from a young boar of the large black breed, half a testicle being placed in each flank. The boar was placed in a crate and a general anæsthetic given. There was considerable swelling, lasting for some days, but no discharge, and the wounds healed readily.

He was not used for stud for about two months, when the first sow with whom he was mated proved in pig and he continued to function successfully.

Grafting for Rejuvenation.

Two examples of the effects of grafting for rejuvenating purposes may now be given:—

1.—*A Spaniel dog,* the property of Mrs. A—— about 12 years old—a very great pet, which was showing all the signs of senile decay. He was grey in the muzzle, thin, walked with a stiff gait, had paid no attention to bitches for some time and was gradually getting infirm and weak.

The owner readily fell in with the suggestion that he should be grafted, so the operation was performed under a general anæsthetic and one testicle, after being cut in halves, was implanted in each flank. Healing was uneventful. In a few months he gradually began to improve in condition, lost much of the greyness of the muzzle, and stiffness, began to run about, take an interest in bitches and at the end of about nine months looked like a dog about five years old. I called at the house about a year afterwards and enquired after Peter and was told that "he was full of life and spirits, but that I could not see him as there was a lady dog in the village who was in season and he was in constant attendance—a thing he had not done for years until he was operated upon."

This dog maintained his youth and vigour unitl he unfortunately picked up some poison and was put to sleep at the age of 14. Slight signs of the graft could still be felt.

2.—*A Retriever bitch,* the property of Mr. B——. A very valuable gun dog and was beginning to get decrepit, so, to improve her health and usefulness, she was operated upon by the usual method with successful results, greatly to the satisfaction of the owner.

Operative Technique.

In performing the operation the two most important considerations are :—

(1) Observation of strict asepsis.

(2) The speed at which the transference of the graft is made from the donor to the host.

In the smaller animals the most convenient site is an area in the flank bounded externally by the tensor vaginæ femoris and internally by the abdominal muscles.

In the larger animals a position in the centre of the neck is found to be the most convenient.

The hair is closely clipped and the skin sterilised, but care should be taken, if the parts are shaved, not to injure the skin, as there is a tendency for the graft to cause a slight irritation over the operation area, which is increased by undue interference, especially in the smaller animals.

A general anæsthetic is therefore preferred to a local, although the latter does not appear appreciably to interfere with the graft.

In the flank operation an incision is made in the skin of sufficient size to admit the graft. The fascia is then incised, not immediately below the skin wound but a little posterior to it, and a pocket is made into which the graft is placed deep into the flank. By this method it is not necessary to suture the graft in position and there is no danger of it approaching the skin wound, which is, of course, sutured.

If sutures are used to retain the graft they should be such that they are easily absorbed and not of silk.

In the operation in the neck, a pocket is made, large enough to receive the graft, in such a position that any discharge can be easily drained away. Any hæmorrhage should be carefully controlled and any blood clots removed. The operation sites should be prepared before the glands are removed from the donor.

When all is ready the testicles or ovaries are quickly removed, either from the live animal under an anæsthetic, or from the dead one immediately after it has been killed. Whelping forceps are useful for this purpose; in this way they are not touched by the hands. The glands are then placed on moist lint at a blood temperature in a sterile container, or if there is likely to be any delay, in physiological saline solution.

The glands are then trimmed, the epididymis being removed, also parts of the tunica albuginea in the case of the testicle, and in that of the ovary, the remains of the ovarian ligament and the outer covering.

Care should be taken in inserting the gland that it does not come in contact with the skin, and the wound should then be immediately closed by means of one or two pairs of vulsellum forceps until suturing has been effected.

Some swelling is to be expected after some days and occasionally a sterile exudate.

For some sentimental reasons, probably connected with the operation on the human subject and possibly to the exaggerated claims made by some operators, there has been a good deal of opposition to the idea of rejuvenation by gland grafting. All new things are opposed by the ignorant and sceptical and one argument brought forward is that the offspring of a grafted animal or human being may be affected by the secretion from the implanted gland and so interfere with the purity of the breed. Some have the idea that the ovum may even be fertilised by spermatozoa from the implanted testicle, even when the testicle is grafted in a situation far removed from that of the host.

From what has been said before, most of these contentions are clearly impossible, but with a view to disproving them I purposely selected in my earlier experiments animals of a different colour and type, although of the same species, from those being operated upon—*e.g.*, the ovaries of a fawn whippet were used for a Sealyham, those of a white terrier for a red Pekingese, a skewbald mare for a brown mare, the testicles of a Large Black boar for a Berkshire boar, and so on. In none of these cases did the progeny show the slightest "taint," and it is hardly conceivable that they could do so. I think, therefore, that any fears that may have arisen in the minds of breeders may be dispelled, and it is rather important that they should be, as some members of the Thoroughbred Breeders Association and Cattle Breed Societies have suggested that the progeny of grafted animals should not be eligible for entry in their stud books.

With the increase of stud fees, especially in thoroughbreds, since the War, it is very important to both owners of sires and mares that breeding animals should be fertile. The loss to owners from infertility must amount to colossal figures and occasion severe disappointments; anything, therefore, which will lessen some of these losses should be welcomed.

All the nations of the world have to come to the British Isles to renew their stock and if, by grafting, we can assist this great industry its economic importance can hardly be estimated.

I should like to thank those members of the profession who have found suitable cases and assisted me in the operations, especially Messrs. Mackenzie, Thompson, Holroyd, Gregg and Coleman.

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Ministry of Agriculture Report on Dr. Serge Voronoff's Experiments, 1928.

Discussion.

The President (Captain G. Dunlop Martin) said that he was sure that all present would agree that they had listened to a most interesting paper; indeed, he thought it was one of the most interesting contributions to the proceedings of their Society that it has been his privilege to hear. (Applause.) One point that struck him, and upon which he desired information from the essayist, was this: he understood Mr. Male to say, in his earlier remarks, that a male grafted with female organs developed all the characteristics of the female, while the opposite also held, in the case of a female grafted with male organs, and he would like to know if Mr. Male could tell them

anything about the anatomical changes—they could understand the temperamental changes quite well.

With regard to male and female animals being rejuvenated, his mind reverted to the biblical instance of Sarah, and he was wondering whether the people of those days were familiar with the operation. In this connection, though hardly relative to grafting, he would like to refer to the inference of thyroid on metabolism.

After a recent meeting of the Royal Society of Medicine, at which Dr. Chalmers Mitchell gave them a most interesting paper on radiation, he was talking to a very prominent member of the medical profession whom he had known for some years, and that gentlemen said that some few years ago (he was now about 60 years of age) he found himself getting very fat and generally somewhat senile. He therefore took one grain of thyroid three times a day, but slowly found himself becoming so fierce and domineering that he had to stop it!

He was sure that a number of them would have a good many comments to make on that most intriguing paper, and he would like to ask Captain Brayley Reynolds if he would kindly open the discussion.

Captain E. Brayley Reynolds said that he was very pleased to do what he could in regard to opening that discussion, though he had hoped to speak later in order to have heard what some of the other members had to say.

He would say, straight away, that he had come up with the idea of criticising, and, if necessary, severely. Openers of discussions, as a rule, were somewhat inclined to pat the essayist on the back. He had always thought this was rather a pity, because a certain amount of criticism produced a better discussion, and was more likely to lead to really useful information being obtained.

He would, first of all, like sincerely to thank Mr. Male for bringing forward that subject, particularly because the essayist was a busy country practitioner, like himself, and he knew the effort and trouble to which Mr. Male must have been put in writing his paper; therefore their warmest thanks should be accorded him. (Applause.)

He would endeavour not to occupy too much of their time, because he was sure many of those present would wish to speak. He would confine himself, therefore, more particularly to certain points, and the first on which he would remark was that Mr. Male had said nothing in regard to the cause of the sterility in these animals; he had only told them, more particularly in regard to the dogs, which he mentioned first, that they were sterile more or less, *i.e.*, they had bred, but did not do so again. Accordingly, Mr. Male had grafted them, after which they bred again—but he did not say what he considered was the cause of the sterility, he mentioned no symptoms they might have been showing, though from what he said afterwards one must assume he considered ovarian trouble was their chief disorder.

In regard to sterility, there had been much written during the last few years, and the more one read of the causes of sterility the more confused one became. There was a welter of ideas and theories on the subject and, speaking as a country practitioner, and so as one coming up against the practical side of the question, he could not help thinking that many who sat down and wrote on the subject rarely, if ever, took their legs from under the table and went into the field. They had elaborated all sorts of theories as to the cause and cure of sterility; personally, he thought they were based perhaps too closely upon laboratory experiments. In later days one had heard much of the endocrine glands, homone equilibrium, in connection with the condition, lack of vitamins as a cause, and derangement of some part of the nervous mechanism as yet another cause. Personally, he thought the chief cause that they, as practising veterinary surgeons, had to combat, was metritis. Several reports contributed to the last International Veterinary Congress had recently appeared in the *Veterinary Record*; there were two, in particular, to which he would wish to direct their attention. The one appeared, to him at any rate, almost exclusively scientific in so far that in it the author incriminated everything that could be conceived as a possible cause of sterility. The other, by Wester, was intensely practical. He (Capt. Reynolds) could not express his views as succinctly as Wester had done it for him. What he, the speaker, wished to convey was that in his view the greater part of the sterility with which they had to deal was not ovarian in origin at all. Diseases of the ovary were very rarely primary, and any loss of function of the ovary which might be corrected by grafting was probably secondary to inflammatory changes in the uterus.

Many writers had referred to implantation of ovarian tissue as a cure, but his (the speaker's) view was that the best line to take was to treat the original cause—metritis, in some cases endocrine therapy might aid in restoring the animal to a fertile condition. Concerning the two thoroughbred mares mentioned by Mr. Male, of course the number was insufficient to prove anything, and he would say straight away that he did not consider the mares were got in foal again because they had been grafted; there was no evidence whatever to support this claim. This opinion was based upon his own experience with a number of mares he had treated, and also with a number of mares treated by other people, that had been barren for three or four years and had again been got in foal although they had not been grafted; therefore the two mares mentioned by Mr. Male provided no proof that it was the grafting that was solely responsible. This brought them back again to the question, what was the cause of the sterility in the mares? He submitted, as he said before, that it was, in the first onset, metritis, and that in certain circumstances this condition might clean up, more perhaps, in spite of what they did to them, and in spite of that gland grafting, than as a result of it. He would like to ask the essayist if, in addition to grafting these two thoroughbred mares, he had employed any local treatment to the womb. He thought he was right in saying that one of these mares passed through his hands last year. From the condition she was then in and from the condition in which she had been described to be after returning home, he had no hesitation in saying that her barrenness was due to womb trouble.

[Mr. Male: "The mare to which I referred had no womb trouble at all when she was grafted, otherwise she would not have bred. Grafting does not cure the metritis."]

Proceeding, Captain Reynolds said he would refer again to one of the reports recently published in the *Veterinary Record*: in it it was stated that there was a very large number of cases of metritis in which no visible sign could be detected with the naked eye. Another point, mentioned by the essayist, to which he would like to refer was manipulation of the ovaries. He did not believe in the indiscriminate squeezing of ovaries, and particularly when done by the layman. This had become very common in cattle practice, and there appeared to be an increasing tendency towards it in bloodstock. He remarked that while it was a very easy matter to manipulate the ovaries of a cow, it was quite a different thing in the mare; some mares, although quite quiet for an ordinary examination and even when the hand was introduced into the rectum, became very restive the moment their ovaries were touched; and again, quite apart from any restiveness, it was not possible to handle the ovaries of a mare as one could those of the cow, one could touch them but not massage them, and in his experience particularly was this so in the case of the right ovary. He had been asked this year to massage the ovaries of mares on the day of service, just prior to this being carried out: what the idea was or what good it could do, he did not know.

Reverting to the treatment of sterility, it was the practice in America, and one which produced excellent results in combating sterility in cattle, to pay more attention to the cow at the time of calving, and this was, he believed, being followed in some parts of this country. This was a view he would strongly uphold, not only in regard to the cow but also in regard to the mare: far better to concentrate on endeavouring to prevent infection of the womb and its consequent sterility than to concentrate on the treatment of the latter. It was astounding to see the really haphazard way in which animals were treated

at the time of bringing forth their young—even with thoroughbred stock, in the very best of surroundings, and with the best and most conscientious of stud grooms: it was surprising how little even the latter really knew of essential details. He was not blaming them, many did all, to the best of their knowledge, that they possibly could; they did not spare themselves any trouble; it was simply that they had never had certain things properly or thoroughly explained to them. He was certain that a great deal of sterility in mares and in cattle had its origin in retained pieces of placenta. With reference to the thoroughbred, he was sure many mares had such small pieces left behind, and he observed in connection with this breed that this occurred in many instances without giving rise to any immediate visible symptoms of illness, whereas in his earlier experience with the heavier breeds it was about ten to one, when this happened, that the mare went down with laminitis. The retained pieces of placenta rotted away, set up metritis, and were the primary cause of the mare proving barren. He desired to emphasise his belief that 80-90 per cent. of animal sterility was due not to ovarian trouble, but to metritis.

He had said that disease of the ovary was very rarely primary; in making this remark he was referring to the mare, more particularly the thoroughbred mare. Of the large number of mares he had examined during the last nine or ten years, he had met with three cases only in which he considered there was primary disease of the ovaries, and a peculiar fact in regard to these three animals was that they were all by the same sire.

This brought him to another point in the paper to which he particularly wished to refer. The title of Mr. Male's paper was "Gland Grafting and its Economic Value." Mr. Male had, in the course of his paper, referred to the economics of gland grafting, but he did not say much about it, though he certainly did refer to the size of fees of many thoroughbred stallions, and the loss to owners of mares should they prove to be barren. In regard to the true economics of making an infertile animal fertile by gland grafting, one should not lose sight of the fact that sterility, or infertility, might be an inheritable factor (he thought Dr. Crew referred to this in a paper he gave at a National meeting some years ago); to render, therefore, such animals capable of breeding might, economically, be very unsound. Some years ago the most noted shorthorn herd in the country, the Bates Duchess herd, was in great demand, but the females were such shy breeders that eventually breeders became shy of buying them, and in time the herd actually died out. Had Mr. Male been available then to act for Mr. Bates, he might have kept that herd going, but it would have been bad economics, and if all those animals, instead of having ovaries grafted into them, had had their own taken out a lot of money would have been saved to the people who bought them.

Mr. Male had spoken of grafting a boar, but he had not referred to the rejuvenation of aged thoroughbred stallions. It had been suggested that if the stud life of renowned stallions could be prolonged much good could be conferred on the breed. His own view was that this was about the worst thing that could be done and would produce the very opposite effect. If a horse had proved himself a good racehorse and later, when at stud, a good sire, it not only commanded a big fee, the better the horse, the bigger the fee, but the more certain it was in the normal course of its stud life, say about 15 years, to be mated with all, or most, of the best mares, and if in that time it had not sired a son or sons fit to carry on its blood, he thought the sooner that blood was allowed to die out the better. The thoroughbred horse "Rabelais," in France, was grafted some few years ago, by Voronoff, at Alfort, but, as with so many surgical operations on human beings, the operation was a success, but the patient died—from pneumonia. He had heard it said that "Ard Patrick," in Germany, had been operated upon, but he did not state this as a fact: he believed, in this instance, however, that Steinach's operation was performed. He only mentioned this rejuvenation by grafting to instance his view of the ultimate economics of gland grafting, though he would not say but that in the gland grafting of pet dogs there might be some immediate economics favourable to the veterinary surgeon.

In conclusion, there was one other matter to which he must refer. Mr. Male had said that some persons had raised opposition to gland grafting. He, the speaker, happened to be at a meeting of the Bloodstock Breeders' Association some two years or more ago, at which this opposition was voiced, and he was one of the people who supported the objections. Mr. Male had said that there should be no objection to it—that nothing hereditary could be passed from the donor of the graft to the host. He (Mr. Reynolds) was not one of those who, as the essayist had said, thought that, in the case of a grafted male, spermatozoa from the graft might fertilise the ovum; he denied the possibility of that on the face of it. He contended that the graft simply stimulated the host's reproductive glands and organs generally into a more healthy condition and so enabled the host to breed again. He would like to ask the essayist, however, if he thought there was a possibility that future knowledge might compel them to modify the present view that nothing hereditary could be passed. It was an agreed fact that the hormones of the reproductive glands exerted certain actions on the organism, the animal body; these were perhaps more noticeable in the male, and more so in some species than in others. In the bull they knew that its masculine characters—the development of its neck, for instance—were due to the hormones secreted by its testicles. If the hormones of the ovaries that were implanted were capable of exerting such an influence on the ovaries and other organs of the host, the uterus and the endocrine glands, was he displaying excessive ignorance if he asked whether it were not possible that these hormones might exert an influence on the ovum itself? Mr. Male had said that he chose animals of a different colour to supply the grafts, but that none of the progeny, born after the parent had been grafted, appeared to be influenced by that colour. It would have been much more instructive if he had gone on breeding from these animals, so that he could have asserted, after a number of generations, that none of that colour, or any other characters, had come out.

In regard to the bloodstock of Britain, that had been so jealously guarded for so many years, it had been the rule that it should not be tampered with in any way whatever, and he thought the Bloodstock Breeders Association was quite justified in taking the view it had: it was one he would always support. He had felt so sure that reference would be made by the essayist to the matter, that he had brought with him a published record of the proceedings at the meeting to which he had referred, and, with their permission, he would quote from it as follows: "Mr. E. Brayley Reynolds thought that knowledge of the results of gland grafting was, at the present stage, so incomplete that the operation was one which should be debarred. It seemed to him that, if some definite results could be obtained from it, in the sense that an impotent stallion could then function again, it showed that some effect from the graft took place—that hormones, internal secretions, of the graft passed into the blood stream of the animal and activated its impoverished reproductive organs. If this took place, how could anyone say that some hereditary trait might not also pass? And in this sense when part of a gland from another and inferior animal—an animal certainly of another strain of blood—had been grafted on, possibly some hereditary characters might be handed on and so lead to very serious pollution. He did not wish to check experimentation or research in this direction—he favoured it—but he did not think it should be carried out at the risk of contaminating bloodstock, the purity of which had always been so zealously guarded."

At the same meeting the following resolution was moved, seconded and carried unanimously: "That this Association strongly disapproves of the practice of gland grafting and is of opinion that every horse or mare that undergoes the operation should be notified to Messrs. Weatherby within a fortnight, so as to give the public knowledge of any animal that comes up for sale that has been submitted to the treatment."

He (Captain Reynolds) still thought that this resolution was justified, and he would like it to be supported by veterinary surgeons, for no haphazard methods should be allowed in the breeding of pedigree stock.

Lieut.-Colonel G. Rees-Mogg stated that he was very troubled with sterility amongst his Friesian cattle, the disorder having cost him hundreds of pounds, because it was frequently the best animal that proved barren. He agreed with Mr. Male and Captain Reynolds that metritis was the cause of a great deal of sterility. He had had the uterus and Fallopian tubes sent to Dr. Sheather, who had told him that both were involved, the latter being quite a solid block, so that one could not expect the animal to breed.

What bothered him most, however, was the failure of animals that had not got contagious abortion to come into service. He had had three great disappointments just recently: animals that he had hoped were six or seven months in calf and would come down just right for Shows, but which had turned out, after that time, not to be in calf at all. Those cows appeared to have been bulled all right and they had been running with the bull for six months afterwards, so that there was no chance of their having come on bulling and been missed. He did not know how these cases could be accounted for. He had used a lot of ovarian extract on animals which had been bulling and which had not come in calf, but he must say he had not had any success at all.

Captain Reynolds had talked about sterility being hereditary. There was no doubt that that was so, but there must be some cause of that sterility or for the animals being shy breeders. Was it in-breeding, or was it because they had been shown a lot of times and had been overfed when they were young? To be honest, they did not know much about it, but one thing was certain, and that was that unless people kept cattle they had no conception of the losses due to sterility. Some thought that overfeeding, especially with too nitrogenous a food, was an indirect cause of sterility, but the losses from sterility remained tremendous in spite of the adoption of advice of all kinds.

He had enjoyed Mr. Male's paper very much, and also Captain Reynolds' opening of the discussion, and he hoped they would hear more contributions from other Fellows.

Professor G. H. Wooldridge observed that, if he might be permitted to say so, he thought the two last speakers had gone very wide of the subject brought before that Society by Mr. Male. They had discussed the matter from the point of view of sterility, which was a very big subject indeed, whereas Mr. Male's approach to the subject had been a particular form of sterility which, in his opinion, was due to some defect of the ovaries alone. He did not think that anyone would dispute Professor Reynold's opinion that metritis was by far the most common cause of sterility, and neither Mr. Male nor anyone else would assume that grafting could cure that condition. Professor Reynolds had set up a good Aunt Sally and had thoroughly enjoyed talking away at it, but he had missed the point almost entirely. (Laughter). He would venture to say that, although Mr. Male's numbers and figures were not enough to justify generalisations, they were sufficiently interesting and convincing to make it worth while to proceed further whenever the opportunity offered. (Hear, hear).

He would like to say that the question of hereditary characters had been confused by Professor Reynolds. In the first place he suggested strongly, and supported the contention, that sterility was due to hereditary characters, and in that opinion he was strongly supporting the hereditary characters in breeding; but then he went right away from it and suggested that those characteristics might also be acquired by the grafting of some foreign tissue—that a mare that had been grafted by foreign ovary might acquire the characters of the mare from which the ovary was taken: and that was the real reason why he objected to the scheme being carried through. He went so far as to persuade the committee, whose report he read, not to pass that resolution.

Captain Reynolds: "I simply expressed a view: it was not I who persuaded them."

Professor Wooldridge replied that it seemed to him, from the reading of the remarks made by Captain Reynolds, that in opposing the procedure the Committee were very strongly influenced by the opinions expressed by Captain Reynolds, and he complimented him upon his having been able to satisfy them that his views were correct, although he (Professor Wooldridge) did not agree with them. Moreover, he thought that no meeting of veterinary surgeons who had any knowledge of sterility would have endorsed Professor Reynolds' opinion. Whether or not it was good policy to get shy breeders to breed, with the possibility of transmitting shyness of breeding, was another matter. Professor Reynolds, however, had an objection to old stallions being rejuvenated: he said that if they had not by that time produced sons who were able to carry on the good work of their father, they would be better out of it. He (Professor Wooldridge) remembered a noted sire, Gallinule, who died in 1911 at the age of 26. In the year 1907, at the age of 22, he headed the list of winning sires: that meant that he must have been getting good winners at the time that he was from 18-19 years old. Therefore it seemed that there were very good reasons for maintaining virility and fertility in horses that had proved themselves able to do well on the turf themselves and to produce good winners.

With regard to the action of the graft, he thought it was simply an instance of being able to introduce hormones in a living form, and so long as those hormones were liberated good results would follow. It was, he thought, a similar thing to the introduction of insulin in the treatment of diabetes: it was furnishing the material which was required for general metabolism.

Concerning grafting, he did not think that the introduction of the hormones of the testicle or ovary had any effect on the hereditary characters of the cells of that testicle or ovary, and consequently he saw little or no fear of any new blood that had been introduced by that graft being passed on to any of the succeeding generation. Professor Reynolds also referred to Rabelais and to his being operated on in Paris, saying that the horse died from pneumonia shortly afterwards. That was introduced by Professor Reynoulds in order to discredit the operation, but as the horse died of pneumonia, in all probability it was a chloroform pneumonia and had nothing to do with the actual grafting.

He thought that Mr. Male was to be complimented on the work he was doing. (Hear, hear). He had made out a good case, but the figures were too few to generalise upon.

Mr. A. Cornish-Bowden said that he would like to thank Mr. Male for the very excellent paper he had read to them that night. He was most anxious to come there, as he believed that the first case of grafting with which Mr. Male had anything to do took place at his surgery, when Mr. Male assisted him in the operation of grafting testicle into a very famous Alsatian stud dog.

Unfortunately Mr. Male had made no mention of any of his failures. [Mr. Male: Yes, I have."] He begged the essayist's pardon: he missed them, they were so few. (Laughter).

He was more particularly interested in Mr. Male's reasons for successes in grafting testicles with dogs and ovaries into bitches, and he would just give a brief outline of that particular case, because its results had been borne out in other cases he had undertaken—not a great number. They had doubtless, as he had done, met with many famous dogs which had been excellent sires and which, for some reason or other, had suddenly ceased to reproduce their species: he had yet to learn the reason for that, and all he knew was the owners came to him and said that their dog had missed to the last eight or ten bitches to which he had been put, and what was the reason? The dog came along and he secured some of its spermatic fluid, finding, under the microscope, that it was lifeless, or contained only one or two spermatozoa instead of millions, or, as more frequently happened, the majority of spermatozoa were without life.

The case with which Mr. Male assisted him was a famous dog which had sired many litters, and which had been very carefully used at stud so as to avoid excess; the dog cost close on £3,000. The owner suggested testicular grafting, and prior to the operation he (Mr. Cornish-Bowden) read up all the information he could obtain on the subject, from the library of the Royal Society of Medicine, while he also wrote to Dr. Norman Haire and had some interviews with him as being the only specialist in that form of amusement in Harley Street—(laughter)—who gave him other assistance. The result was that he (the speaker) said he would graft the dog, but he did not give any hope of success in the way of the dog being able to prove fertile to reproduce his species.

The animal was a young dog, three years old, and the dog enjoyed it very much—and that was all that he could say, for as far as stud work went he remained useless. That had been the case in the other two dogs he had done, although the grafts had taken and had persisted for a considerable time—in the case of this Alsatian they persisted for nearly two years. The dog went to Canada and was there largely advertised at stud. (Laughter). He did not know why those dogs ceased to form sperms.

With regard to Mr. Male's remarks as to cross-grafting—grafting the gonads of the male to the female and *vice versa*, many years ago he fancied himself as a caponizer and he did a little of that in poultry. He grafted the testicles of a cockerel into a pullet, and he used rather to fool himself that he could notice male characteristics in that pullet: it certainly grew rather a larger comb than its sisters and once he almost persuaded himself that he could hear it crow—but it required a lot of persuasion. (Laughter).

Concerning Steinach's operation for rejuvenation, he had done a number of dogs, with very indifferent success. He would mention that he had done the majority of them under local anæsthesia only, and in four cases right off the reel the dogs died shortly afterwards from pneumonia: whether there was anything in it, he did not know. He had had three dogs that had survived (marvellous to relate), but he was disappointed in the result. He thought they "bucked up" a little for about six or eight months, but they did not get the long life afterwards that he had expected, and he had not done any now for about two years.

With regard to transplantation of ovaries bringing the female into œstrum, he did not know if any other Fellow of the Society had noticed it, but he had got a number of well-bred bitches which had never come into season or had missed after their first season, and he had noticed that these bitches had retained their puppy characteristics for a long time. Another Alsatian at the age of two years behaved like a puppy; she was fairly well grown, but quite useless for exhibition purposes. She happened to belong to one of the doctors at the Wellcome Research Laboratories, and they got hold of the head physiologist there, who had some hormone substance (extracted from the placenta, chiefly) and that substance brought this bitch into season within four days. She was mated, but there was no issue; however, six months later she came in season again, was mated and had a litter of puppies, some very fine ones. He had had substance for four or five similar bitches and in each instance had used it with great success. He thought that in a good many of these cases of shy breeders probably some substance of that nature (especially placenta substance) would probably have just as good an effect as the grafting of ovaries.

He desired to conclude by reiterating his thanks to Mr. Male and Captain Reynolds for the very instructive observations they had made.

Major Glyn Lloyd also congratulated Mr. Male on his paper, adding that a remark passed by the President regarding the use of thyroid reminded him of an experiment tried at the Equitation School, Weedon, in 1924, in respect of the grafting of thyroid gland into a horse.

Captain Walker, O.B.E., M.R.C.V.S., of Slough, noticed in the course of his practice that most of the roarers he had seen had an atrophied thyroid gland and his theory was, that the reason for that was that most young horses were affected at some time in their young life with strangles, and that either the swelling of the strangles abscess pressed upon the blood vessels supplying the thyroid gland causing it to atrophy, or that some toxin was elaborated from the strangles abscess which had that effect. He also thought that the thyroid hormone actually had some effect on the recurrent laryngeal nerve. On these assumptions he thought that by grafting the thyroid gland from another animal the roaring might be alleviated. He asked if he could try this experiment at Weedon, and he (Major Glyn Lloyd) obtained permission from the War Department to allow him to use the thyroid gland of an eight-year-old gelding that had been cast for destruction on account of suffering from a chronic bone disease. The technique of the operation was similar to that which had been described by Mr. Male. The thyroid gland of this eight-year-old gelding was divided amongst three known roarers, and the ultimate result was that in only one of the three cases was there any improvement in the roaring, though all three showed a marked improvement in condition. He (the speaker) had the opportunity, later on, in India, of trying thyroid grafting simply with the idea of improving an animal's condition, a report of which appeared in the *Royal Army Veterinary Corps Journal*. He grafted the thyroid gland of a mule due for casting into a heavy draught horse, aged 15 years, and the improvement in the animal's condition in the course of six months was remarkable. Unfortunately, he had then to be destroyed, as over age for Army purposes, and on *post-mortem* the graft he had put into the sterno-maxillaris muscle had disappeared and was only evidenced by a small piece of fibrous tissue. He thought that possibly the whole idea of gland grafting and also of the Voronoff operation had been commercialised to such a degree that many people looked upon it as pure humbug It was only by such gentlemen as Mr. Male trying those experiments that they could procure data to add to the fund of knowledge. (Hear, hear.) He believed that the profession could add far more to this knowledge than the practitioners of human medicine, because besides being a very expensive operation in the human subject, there was a certain amount of public sentimental objection to performing the operation in the human.

Professor J. McCunn said that he was sorry that he had been unable to arrive in time to hear either the paper or Captain Reynolds' opening of the discussion; therefore he would only place on record his own and his colleague, Mr. Formston's, results of the Voronoff and Steinach operations in the dog. In no case had they attempted to provoke a useful sexual life, but for other reasons in a number of old dogs they had performed the operations with quite good success.

They started with the Steinach operation in the first instance, and they performed it on eight subjects and with only one failure, and that only a partial failure. The first one they did was on a very old dog, and was performed two years ago, the animal being 16 years of age when operated upon. It was completely blind in the left eye and had an opacity of the cornea of the right eye; it could scarcely rise and when it walked it did so with a paralytic type of gait. Its skin was eczematous and it did not care whether it ate or not. The success of the Steinach operation in this dog was remarkable. He saw the animal last about a month ago, and learned that he had gone on and on rejuvenating. (Laughter.) Now he had got a beautiful coat; one eye was practically clear and the left eye, which was the worst when they operated, was partially cleared. The dog now ate well and chased cats in a very fit manner.

In another case, a dog aged 14 years, the Steinach operation was performed with the idea of trying to alleviate some skin symptoms. The animal was suffering from the eczematous condition met with in old dogs. The dog remained at the College for three weeks and in that time his skin practically cleared up: he became fat and he even went so far as to bend the wires of his cage with his teeth, while he played vigorously with a ball which was given him. He saw the dog again soon afterwards, and

that animal, too, went on and on rejuvenating, and it even reverted to the habits of his youth—when his mistress took him out he revisited the chicken run (which he had not done since the age of three) and killed a number of chickens. He became a good house dog, fought all the dogs he met, and he died at the beginning of December as the result of a fight with an Alsatian. (Laughter.)

They had had other results, not so spectacular as those two. A bad result was in the case of an old greyhound called "Stowmarket," runner-up in the Waterloo Cup in, he believed, 1925. When track racing started he was put on the track and did well for a time, but as he got older he went back. He became stiff and had practically to be lifted off his bench. The Steinach operation was done with, at first, remarkable results: he became full of life and vigour. In about eight weeks, however, he developed a slight cough, which was disregarded at the time, but persisted, and it was eventually found that there was pleural effusion. He was needled, and a loopful of the fluid was found to contain many tubercle bacilli. This case gave him (Dr. McCunn) cause to think, because he was sure that if there was any trouble in the body, such as tubercle or malignant disease, which might be latent, the operation would light up the disease processes in the same way as it exercised a rejuvenating influence on other tissues.

As regarded the Voronoff operation, they had done four dogs, of which they had records and three of which they had none. These four were greyhounds and he thought at that time he could give them their names: the first two were named "Go Joker" and "Brass Band." Both of these dogs had raced on tracks until they could no longer be graded. They were submitted to this operation: half a testicle from a fighting dog was grafted into the flank. The results were remarkable. They were sent to the Brighton course where, much to everybody's surprise, they both started to win. They went on to Ramsgate, where their winning career continued. Last summer "Go Joker" had a very successful season at the White City, and to-day both dogs were very fit and looked like winning a few more races.

The other two dogs were named "Big Drum" and "Frontenac." In the case of "Big Drum" the results had been remarkable. "Frontenac" had done well, too, but that dog had a necrotic tail end and he was hoping that the result of that rejuvenation operation would be to stimulate the healing process in his tail, but although he looked fit and well his tail had not responded at all.

He thought that both the Steinach and the Voronoff operations had their uses, but the "snag" they were up against was the fact that something might be latent, as in "Stowmarket"—he was sure he was indirectly the cause of the death of "Stowmarket." They were going to continue with these operations whenever opportunity offered and although, on the numbers that he had given them, it was not fair to lay down any rule, he thought that the operations offered a great chance of success in the way that he had indicated, *i.e.*, in reviving and prolonging a loved or useful animal's life.

The Reply.

Mr. G. P. Male, replying, said that the paper had taken a good deal of time; in fact, he had been three years in accumulating facts. He had tried to give a fair picture of the cases which he had described—he had not tried to put on rose-tinted spectacles; on the contrary, he had endeavoured to be very impartial. (Hear, hear.) He feared that he had no "big drum" to beat, nor anything so spectacular to report as had Professor McCunn. His experience had taught him to be sober in his judgment, and where he had departed from that rule it had been in quotation from letters from owners and other people.

He would be the last to say that grafting was going to cure everything—metritis, diseased tails, metastatic growths in the abdomen of dogs, or anything like that: all he said was that the experiments he had made had led him to definite conclusions—and not only him but many other experimenters (unfortunately, there were not many in this country). If these experimenters were all like Captain Reynolds he did not suppose that there would be many experiments, because he had rather put a damper on the whole thing—yet he had given no proof of the contentions he had made: he had theorised all the way through.

Captain Reynolds had talked about the cause of sterility, which was not the subject of that paper; he (Mr. Male) would agree with him that metritis was one of the chief causes of sterility. But Captain Reynolds could not have it both ways: he had contended that they did not want to reproduce sterility in animals, and yet he said that most cases of sterility were due to metritis. Nevertheless, he (the speaker) was not sure that metritis in animals was not improved by grafting: they knew it rejuvenated the animal—improved metabolism. But he would not put that forward as a definite conclusion, because he had not had enough experience. In the cases he described in these mares, they were not affected with metritis, so far as one could see. They did know, of course, that some mares were barren for some time and afterwards conceived, but it was extraordinary that those two mares conceived immediately they were grafted, and those results were borne out by the bitches that were grafted. He had told them that in the case of cows the results were disappointing, and he told them the reason for that.

Then it was suggested that he had not always stated the cause of sterility: he did not know whether anyone could state, every time, the cause of sterility in a particular animal; personally, he could not lay claim to anything approaching that state of knowledge, but he had indicated in his paper, in the case of those bitches, that they were old bitches and had finished reproduction, yet they started reproduction again.

The President had asked him to describe the anatomical changes which took place in the experimental animals that were grafted by Steinach and others. The male animals which had their testicles removed and female ovaries grafted in, assumed the characters of females: they did not develop—they were even smaller than the females themselves—and the penis and other male generative organs atrophied. The teats and mammæ enlarged and sometimes produced milk, and the animals showed all the characteristics of the female.

In the case of the female animal in which testicles had been implanted after removal of the ovaries they grew very much bigger; they took on the appearance of the male; the clitoris enlarged, but the uterus atrophied and the teats remained undeveloped as did the mammæ. Then, of course, they got the hybrids, with both organs functioning, sometimes the male predominating and sometimes the female.

[Captain Reynolds: "May I interrupt? Mr. Cornish-Bowden asked the question—you did not make it clear in your paper in regard to this transplantation and the assumption of characters by the host from the donor—did you, in the case of the female, take out the ovary before putting in the testicle, and, in the case of the male, take out the testicle before putting in the ovary?"]

Mr. Male said that he had given a brief history and the conclusions that had been arrived at by the authors he had mentioned: these were Steinach's experiments, not his. Yes, the testicles or ovaries were removed before grafting.

Proceeding, Mr. Male said that Captain Reynolds had mentioned the difficulty of massaging the ovaries of the mare, and he gathered that he did not believe in this procedure. He did not know why—possibly it was for the same reason that he did not believe in grafting. [Captain Reynolds: "I never said I did not believe in grafting."] At all events, Captain Reynolds' whole argument was against it, as also was his statement to the Thoroughbred Breeders Association, but if he said he was not, he was glad Captain Reynolds had been converted.

Resuming his talk about massaging the ovaries, he agreed as to the abuses of the practice in cows—it could not be done excessively in mares as they resented it. At the same time, there was no doubt that it was, on occasion, of tremendous use. Massage of the ovaries, especially in the cow and in many cases in the mare, would bring about œstrum. He had there a letter from a breeder who had a particular mare which never bred unless her

ovaries were massaged. He supposed that Captain Reynolds would say that that mare ought to be shot, but they did not all think like that, and he certainly did not believe that she would reproduce that tendency if she did breed.

With regard to economics, Captain Reynolds thought that animals which got progeny which failed to breed ought to be put to sleep, but there were many well-bred animals and others that were very valuable that got some of their best stock in their old age, and if that rule had been applied they would have lost some of their most valuable animals.

Professor Wooldridge, talking about Rabelais, made the point that he was going to make, that although the horse succumbed to pneumonia, that pneumonia was the result of the chloroform and not of the grafting, and to remove the objection of casting those old animals he should prefer to graft in the neck or in some other part of the body, where it would take, which did not necessitate casting.

He was very interested in Professor Reynold's remarks about part of the after-birth being left. That frequently happened, and in any stud with which he was connected there was always a rule made that the after-birth should be spread out, and examined most closely to see if every little bit was there.

Colonel Rees-Mogg had trouble with cows not coming into season; he thought that if Colonel Rees-Mogg had massaged the ovaries, gently and properly in many of these cases, he would have had very good results. He could only tell him that not long ago, in a Guernsey herd, he treated 13 cows. He found that one had dropsy of the uterus and she was condemned, but all the other twelve bred after they had been treated once by uterine irrigation or massage. One heifer in that herd was over four years old and looked like a bullock. She had never bred, but she came in season after a massage of her ovaries and subsequently had a good calf. With mares, of course, one had to be rather careful, because some mares were a little difficult.

He must thank Professor Wooldridge very much for his remarks and for his support.

Mr. Cornish-Bowden had reminded him of a very pleasant afternoon they spent together: it certainly was his first case of attempted grafting, and as it was Mr. Cornish-Bowden's case it was for the latter to report and not him. He did not know the history of it until that night, but he was sorry to hear now that the operation was not successful. He thought that if Mr. Cornish-Bowden would operate on bitches that had stopped breeding he would get many successes: he had been more successful in bitches than in dogs. Mr. Cornish-Bowden seemed rather to favour injections instead of grafting in bitches, but he thought he would find that injections were not so successful.

He was very interested in Major Glyn Lloyd's thyroid grafting experiments. If the thyroid gland was the cause of the roaring, by all means put it in. One could not lay down any hard and fast rules: what applied to one species of animal did not always apply to another. The bitch was very different from the mare. The mare would go on breeding till she had perhaps 25 foals, but in the bitch there was a limit.

He must congratulate Dr. McCunn on his successes with the Steinach operation: he did not know if he had bred from the subjects of those operations; if so, he should like to hear the results. Dr. McCunn had rather whipped himself because he thought that he had lighted up the tuberculosis. Let them look at the many cases of generalised tuberculosis: cases in human beings went on for years and suddenly there was a lighting up. His own opinion was that the effect of the grafting would be to help the animal in its fight against the disease.

He hoped he had answered all the questions; if not, he trusted that they would forgive him.

The Hannah Dairy Research Institute was officially opened on Saturday last by the Right Hon. William Adamson, Secretary of State for Scotland.

Testicular Grafts on Rams.*

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On account of the numerous extravagant claims made by various investigators [1, 2, 3, 4] of results obtained from grafting portions of testes on to both young and old animals, especially as applied to sheep in stimulating reproductive ability and the greater production of wool and flesh, a proposal was made towards the end of 1928 by one of us (R.M.C.G.) and forwarded by Professor Stewart to the Sheepbreeders' Association of New South Wales, that the claims be tested out in carefully controlled experiments to be conducted by the staff of the Veterinary School, the University of Sydney, with the assistance of the above Association. Already a certain amount of work had been done on testicular transplants in goats[5] without very promising results.

A large scale experiment was carefully mapped out and discussed at the meeting of the Council of the Sheepbreeders' Association on January 31st, 1929, but financial and other difficulties precluded its being carried out in its entirety. On May 31st, 1929, it was decided that members of the University staff, working in conjunction with officers of the Department of Agriculture, should carry out an initial experiment on a small scale to test the validity of certain of the claims already referred to and that if promising results were obtained, the scope of the experiment should be extended. It was agreed that individual members of the New South Wales Sheepbreeders' Association should supply the required experimental sheep, and that the work would be carried out at the University and at the Veterinary Research Station, Glenfield.

Historical.

To Brown-Sequard[6] may be attributed the first attempt to bring about rejuvenation of an aged individual by the use of secretions of the testis, this worker claiming success by administering subcutaneous injections of semen. Voronoff[1] believes that the male hormone produced in the normal testis largely controls the effects of age and that, since this hormone is normally being secreted and absorbed constantly, even bi-daily injections of it are unlikely to be effective. He considers that the implantation of dead testicular tissue within the body may lead to gradual absorption and distribution of the hormone until it is completely absorbed in a few months. On the other hand, he maintains that living testicular tissue can be grafted in certain selected sites, become vascularized and live and continue to function, in so far as the production of hormone is concerned, for a considerable period. He claims that the external surface of the parietal *tunica vaginalis* is the ideal site for the implantation of testis grafts as a result of his experience in grafting, and for the reasons that it is the natural position from the point of view of the function of the graft and that it has a rich blood supply

*Reproduced, with some abridgment, from *The Australian Veterinary Journal*, September, 1930, Vol VI, No. 3.

which will immediately pour out exudations of nutritive fluids and later bring about early vascularization of the grafts. He states that, as a result of testis grafting, old animals may be rejuvenated so that as well as other changes, including prolongation of the length of time of wool production and the like, their sexual vigour returns. In young animals he claims more rapid development, increase in amount and length of wool or hair produced and increase in the body weight. The records of his experiments[2, 3] suggest the possibility of the transmission of these characters, acquired by grafting, to the progeny. Dartigues[4] and others of Voronoff's school in every way support his claims, while the British delegation to Algiers[7] is not so enthusiastic, and considers that "the evidence is, however, not based upon critical experimentation," and that "the results are capable of other explanations. . . .". Moussu[8] considers that, with certain reservations, "the results . . . certainly speak in favour of animal grafting." Velu and Balozet[9] have repeated Voronoff's experiments and conclude that "grafting only offers . . . a great illusion." Rollet[10] considers that no true grafting is effected, but that testicular tissue is merely transplanted, and that slow absorption of this tissue may account for the symptoms observed.

Since the commencement of the series of experiments to be described in this report a number of papers having a bearing on the subject have been published and a considerable amount of literature, which was not at that time available, has been procured. Much work of considerable value has been done on the male hormone and its nature. Moore and others[11, 12, 13, 14] have extracted the hormone from the lipoid fraction of the bull's testes, and have discovered reliable tests for its presence. Moore[15] and Heller[16] have studied the effects of this hormone in increasing the longevity of sperms in the male reproductive tract, and the former has found that non-living testis grafts, as judged by this criterion, do not produce a gradual absorption of hormone into the body as suggested by Voronoff and Rollet, and that there is no storage or cumulative effect of the hormone. Elsewhere Moore[17, 18] has shown conclusively that testicular and epididymal tissue can, under certain circumstances, be successfully transplanted and continue to live and even to produce spermatozoa if the grafts are made within the scrotum. He notes that such functional transplants are more readily effected in some species of animals than in others.

Even if living and functional grafts can with reasonable certainty be effected in domestic animals, the procedure is unlikely to be suitable for general application, and its usefulness may even be quite limited. In a sire-importing country a method of prolonging the usefulness of valuable males would be of undoubted value; in this country its greatest application would be to thoroughbred stallions. On the other hand, in a sire-producing country such a method would have its limitations while our present methods of breeding persist, for most breeders rely on "outcrossing," and, consequently, if a valuable sire were to continue breeding for an unduly long time, difficulty would arise in finding unrelated females to mate with him. The necessity for this outcrossing appears to arise from the fact that few breeders consider that any animal is sufficiently perfect to continue mating him to near relatives, apparently on account of his lack of genetic uniformity as well as for other reasons of fertility, etc.

Even if Voronoff's claims in regard to the beneficial effects of testis grafts on immature males be substantiated, the method is unlikely to be of any considerable economic value, because the cost of performing the operation on ordinary flock animals would be prohibitive, and it is only likely to be used on the more valuable members. Until the transmission of acquired characters, such as those claimed to be conferred by grafting, has been proved by properly controlled scientific experiments, the value of testis grafting for its effect on the progeny of grafted animals must be doubted, and will not be dealt with in the present report.

Objects of the Investigation.

The rams used in the present investigation were divided into three groups.

(1) *Histology Group.*

The object of this group was to determine the fate of the testicular tissue of the donor after being grafted for varying periods into the scrotum of young receptor male rams. For this purpose two-year-old rams were selected as young adult donors and one-year-old rams as immature receptor animals. The technique of the grafting operation by Voronoff[1, 3] was followed in all cases. It was intended to destroy the animals and recover the grafts at the following intervals after operation: twenty-four hours, three days, seven days, ten days, fourteen days, twenty-one days, one month, two months, three months, five months, eight months, and twelve months. For each animal grafted, one donor testis was required, so that for the twelve receptors six donors were required.

(2) *Production Group.*

This group was employed to determine whether increased production and hastened maturity could be obtained by means of testis grafts or by other methods in immature rams.

For this purpose three immature rams were grafted, as in the last group, into the scrota of three others, aseptically pulped up testis was injected into the space between the dartos and the parietal *tunica vaginalis*, and three were kept as controls. The testis pulp was made by finely grinding the testis and then passing it through a cheese cloth sieve under considerable pressure. Of this material, a sample of which was found to consist of about 40 per cent. cells, the equivalent of about one-eighth to one-sixth part of a testis was injected.

In selecting the rams for this purpose three groups of uniform rams were chosen, and for each group a single donor was used, one of each group was grafted with one testis of the donor, another was injected with pulp made from the other testis of the donor, and the third of the group was kept as a control.

(3) *Rejuvenation Group.*

This group was intended to determine whether old senile sterile rams could be reinvigorated and rejuvenated, so as again to become virile and fertile, by various means. In this part of the experiment we intended to include twelve such sterile rams, but being unable to obtain this number, were forced to include only four.

One two-year-old donor was used, one of his testes being grafted on to one of the senile rams as described in the first group, and the other donor testis was pulped up

aseptically and extracted with sterile saline solution. The expressed fluid extract was used as an injection into the scrotum of the second senile ram, and the pulp, prepared as in the previous group, was similarly injected into the scrotum of the third senile ram. The fourth senile ram was kept as a control.

All the rams in the experiment were very carefully selected for uniformity in type, wool, size and weight in each group and were put into pairs, threes or fours as required. Further, they all come from one well-known stud, and hence uniformity in breeding was assured. The donor animals in all cases were two-year-old rams, and were similarly uniform. The total number of rams used was as follows:—

Group (1): 12 young rams (one year), 6 donor rams (two years).

Group (2): 9 young rams, 3 donor rams.

Group (3): 4 senile rams, 1 donor ram.

All the rams were kept together under identical conditions of feeding, etc., throughout. Careful observations of body weight and wool were regularly made, and samples of the fleeces at each shearing were kept for comparison. All the animals were kept at the Veterinary School for the first four months, and those remaining at that date were transferred to Glenfield Research Station.

Operative Procedure.

The operative technique was essentially that recommended by Voronoff[1] and his school. It differed mainly in the fact that the epididymis was not entirely stripped off the graft, but a small amount of this tissue was allowed to remain unattached. Both donor and receptor animals were restrained on their backs on adjacent operating tables and the scrota of both were prepared by shaving the hair and wool or removing it with barium sulphide depilatory paste, usually immediately prior to operation. Sometimes the shaving of the scrota was done on the day preceding the operation, but it was found that less skin hyperæmia was present and consequently less annoying skin hæmorrhage occurred if the site were prepared immediately before operation. The whole surface was then dried and cleansed with benzine and 95 per cent. alcohol, followed by a liberal application of *tinctura iodidi mitis*. The remainder of the body was covered with dry sterile towels. The scrotum of the receptor was drawn backwards, and its anterior aspect anæsthetised by subcutaneous injections of 3 per cent. cocaine solution. The scrotum of the donor was similarly treated, and in addition the spermatic cord was locally anæsthetised by deep injections.

An incision about three or four inches long was then made through the skin on the anterior surface of one side of the scrotum about one inch from the raphé and parallel to it. Hæmorrhage was carefully arrested before similarly incising the dartos and separating the latter on either side of the incision from the underlying parietal *tunica vaginalis*. In this way two pockets were produced and into each of these about a quarter of the donor testis was later placed. Having thus prepared two pockets, a testis was aseptically removed from the donor, placed on sterile cloths, and carefully cut into four parts as nearly equal as possible. In most cases a portion of the epididymis was left attached to each graft, which was carefully trimmed with scissors to a size of about 2½-in. to 3-in. by 1½-in. to 2-in. by ½-in. to ¾-in. as recommended by Voronoff and Alexandrescu.[2a] The *tunica albuginea* was left intact, and the edges of the graft trimmed to form a thin edge, the grafts being kept wrapped in warm sterile cloths till required. After gently scarifying the external surface of the parietal *tunica vaginalis* in the two pockets formed in the scrotum, a graft was placed in each with the raw surface towards the tunic and kept in position by a suture at each end and one at each side, or by a continuous suture round the whole periphery of the graft, taking care that the sutures passed just into the vaginal tunic of the host and through the *tunica albuginea* of the graft. In all cases care was taken that the two grafts did not come in contact. The dartos was then sutured over the grafts with catgut and the skin wounds closed with Michel's metal clips as recommended by Dartigues.[4] The wound was then sealed with collodion. The opposite side of the scrotum was treated in the same way. Finally, a thin calico or muslin bag was passed over the whole scrotum with tapes attaching it over the animal's back; in this way contamination of the wound was further prevented.

It will be seen from the above description that four grafts constituting most of one whole testis of the donor were thus implanted in the scrotum of the receptor. In some cases where the donor ram's testes were exceptionally large, or where the receptor ram's scrotum was especially small, a less proportion of the donor's testis was used for grafting, as it was found from the experience of the first few animals grafted that if excessively large portions were grafted on to a small scrotum, even though they remained aseptic, necrosis of the overlying skin from the pressure of these grafts occurred, and the grafts were liable to be lost by sloughing.

In general, the after-treatment consisted in careful daily observations of the animal's general condition and antiphlogistic treatment (long continued hot foments and massage) of the scrota. In most cases, there was an inconsiderable rise in body temperature during the succeeding few days, and in no case were post-operative general symptoms marked. In none was sepsis observed as a result of contamination at operation or subsequently through the lips of the wound. In some, however, pressure from within exerted by excessively large grafts caused interference with the blood supply of a localised area of the overlying skin, and this led to a slight discolouration o fthe cuticle about five days after operation, and occasionally later to complete necrosis of this portion of the skin, and finally sloughing of it together with the graft. In many cases there was a fairly considerable inflammatory reaction involving the whole scrotum, accompanied by considerable outpouring of lymph both into the cavities produced by operation and into the intercellular spaces. Occasionally a definite œdema developed. Swelling was most marked three or four days after the operation and gradually subsided. According to Walker[23] the reaction is typical of such operations in man, and this authority considers that the exudation is likely to be of value in nourishing the graft till vascularisation occurs.

For the sake of uniformity the whole of the operative procedure and after-care was carried out entirely by one of us (R.M.C.G.), who was greatly assisted in the latter by the students of the final year in the Faculty of Veterinary Science.

The remainder of the report will appear in the next

issue of this Journal, and will contain the results of the histological examinations of the grafts recovered at the various periods after implantation, together with further clinical observations on those animals which have been retained for a considerable time.

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In the course of the further contribution to the subject, referred to above, and published in the *Australian Veterinary Journal* of December, 1930, pp. 132-145, the authors say :—

Since the publication of the first part of this report there has been received the Sixteenth Report of the Director of Veterinary Services and Animal Industry in South Africa. in which Quinlan, Maré and Roux[1] have published the results of an esssentially similar, and in some ways more extensive, series of experiments on gonad grafting in merino sheep. Their experiments differ mainly from ours in the following details :

(1) The animals were prepared for surgical work by preliminary feeding on laxative foods and starvation for 24 hours hours prior to operation.

(2) Chloral hydrate narcosis was adopted in place of local anæsthesia.

(3) The grafts were taken from the donor's testis while this organ was still attached to the animal's body.

(4) In the young immature rams only a single graft was implanted on the parietal vaginal tunic of each testis though in the old ram two such grafts were made on each side.

Despite these considerations, the full publication of the results of the present series of experiments is likely to be of considerable value, partly on account of the increased scope of the investigations in certain directions and partly on account of its purely scientific value in regard to the fate of the grafted tissue as well as for the reason that it largely confirms the South African work.

All the animals in the *Histology Group* mentioned in the previous article have been killed and the fate of the donor's testicular tissue after being grafted for varying periods into the scrotum of young receptor male rams will be discussed. The *Production Group*, including those receiving injections of pulped testis into the scrotum and grafted animals and controls, and the *Rejuvenation Group*, including the same lots as the Production Group, together with one receiving extract of testis, will be dealt with in regard to wool production, body weight and the grafts. No noticeable differences have been observed in regard to the behaviour of animals in the various lots.

The authors give detailed and illustrated reports of their experiments and summarise their histological findings as follows :—

(1) Testicular and epididymal tissue has been successfully grafted on to the parietal *tunicæ vaginales* of young and old merino rams.

(2) In small areas of the grafts, testicular and epididymal tissue has been recovered in a state in which their cells show nuclear staining at 24 hours, three days, seven days, 21 days and 24 days after grafting.

(3) Normal spermatocytes have been observed in grafts removed 24 hours after grafting, but not later.

(4) Normal spermatogonia, epididymal epithelium and original interstitial connective tissue have been observed in grafts removed as long as 24 days after grafting.

(5) Normal spermatids have been observed as long as two months after grafting.

(6) In no case did the apparently living tissue appear to be growing.

Discussion.

Voronoff's claims of rejuvenation by living and surviving testicular grafts were mainly supported by clinical observations and in comparatively few instances were the grafts recovered and submitted to histological examination. Retterer,[2] who examined these grafts, found that in goats the superficial parts of the graft may continue to grow and even produce spermatozoa though, in most cases, the epithelial tissue is later replaced by fibrous tissue ; in rams he found that the peripheral cells of the tubule may survive and the remainder form detritus in the centre of the tubule. Elsewhere Retterer[3] is said to have found in grafts some degeneration of the epithelial lining of seminiferous tubules and an increase of the interstitial tissue. Some months after grafting the interior lining of the tubules was not only living but had increased and the lumen was obliterated so that the tubules were converted into cords ; in one case a graft, taken from a donor animal which had not yet reached puberty, showed sperm production when removed fourteen months after transplantation.

Voronoff and Alexandrescu[4] carried out an experiment in which testicular grafts on dogs were removed and examined histologically at one day, four days, seven days, two weeks, two months and six months. Their findings in the case of the one, four and seven day grafts were somewhat similar to ours, but in the grafts examined at longer periods after grafting they claim to have found solid

columns of cells or islands of cells representing the seminiferous tubules and profuse interstitial tissue containing epithelioid cells which they believe to be Leydig cells. It will be observed that our results differ from theirs in the longer time grafts.

Moore,[5] experimenting on rats, has been able to transplant whole young testes into castrated and uncastrated males and females and to recover a large percentage of the grafts (59 per cent.), which he found could live as long as six and a half months (the duration of the experiment) and even produce spermatozoa if the grafting were done into the scrotum. He notes that epididymis will often persist when the testicular tissue proper has disappeared. Richter, Curt and Wislocki[6] carried out similar experiments, but with them the percentage of "takes" was lower and in the grafted tissue spermatogenesis never progressed as far as actual sperm production. Quinlan, Maré, and Roux,[1] working on merino rams, state:—

"Histological examination of grafts sectioned 110 days after operation has shown the centre containing hyalinised remnants of the seminiferous tubules, the lumina of which are filled with neutrophiles. Interspersed between the remnants of the tubules, and also in a deep zone surrounding this area, there is an accumulation of neutrophiles and round cells. Surrounding this latter area is a zone containing epithelioid cells, round cells, fibroblasts and foreign-body giant cells. Outside this zone there is a zone of fibrous tissue.

"The graft seems to act as a foreign body. The only recognisable testicular tissue, namely, the hyalinised remnants of seminiferous tubules, is dead and in a process of absorption. The cells observed are those which occur in lesions showing the ordinary reaction seen in the resorption of foreign bodies."

Balozet[7] and Velu and Balozet[8] consider that portions of testicular tissue implanted in another animal are kept alive at their periphery by penetration of the host's plasma for short periods only, and that they are entirely replaced by connective tissue in six weeks. For this reason he considers that grafting is not a fitting term and suggests that implantation be used.

In contrast with the varying results of other workers our experiments show that portions of testicular tissue, transplanted into the scrotum of another animal of the same species and breed, may live at least as long as 24 days after grafting and that the living parts are always in close relationship with new blood vessels developed from the host's tissues; in fact, vascularization appears to be the limiting factor in the persistence of the grafts. In these experiments complete replacement of the transplanted tissue had not occurred two months after grafting and its presence was indicated as long as three months after grafting. In unpublished work by one of us (R.M.C.G.) testicular tissue grafted in the scrota of old rams has been recovered as long as ten months after grafting; in one case a distinctly palpable graft has already persisted for more than 18 months. Grafts have been recovered also in goats 10 months after grafting.[9] It appears from this work that absorption is more rapid in young receptors than in old grafted animals. As is indicated in a subsequent table in this article, however, it seems likely that grafts made into the scrota of one year old rams may persist in some cases for at least a year.

In our previous report it was mentioned that some more or less marked local inflammation accompanied by swelling occurred in all animals grafted and Walker[10] considers the reaction typical of such operations in man. In Moore's experiments[11] the inflammatory reaction appears to have been rather acute and his description of the lesions suggests infection in a considerable number of his cases. In the South African experiments, however, "healing . . . took place . . . without swelling or any constitutional disturbance." These variations in the reaction at the site of implantation seem to have no relation to persistence or otherwise of the graft. Further, much local inflammation and swelling were present in the scrota of two rams from which grafts containing living cells were subsequently recovered and little local inflammation and swelling in the scrota of another two rams from which grafts also containing living cells were subsequently recovered. However, seeing that some inflammation was present in all our cases it may bear some relation to the fact that spermatocytes were only found in grafts 24 hours after implantation. Heller[12] has shown that raising the temperature of the scrotum only a few degrees is sufficient to cause degeneration of all the seminiferous tissue, with the exception of a few cells lining the tubules, and Voronoff and Alexandrescu[4] quote Fukui as having described degeneration of the seminiferous tissue after cases of high fever. The increase of the local temperature of the scrotum, as a result of the inflammation, in our cases of testicular grafting may have been sufficient to cause degeneration of all the seminiferous tissue except the spermatogonia lining the tubules, in all grafts except that of 24 hour duration, in which the period of increased temperature would be insufficient to bring about the result.

In regard to the clinical effects of grafting, Quinlan, Maré and Roux's,[1] discussion suggests that Voronoff's results were not due to hormones secreted by a living graft but due to "opotherapic absorption of the slowly perishing gland." This view was held by one of us (R.M.C.G.) as the result of testicular grafts in goats,[9] but Moore[13] has shown that there is little or no storage in the testis of the male hormone. Taking into consideration the facts now at hand we put forward the suggestion that, if any increase in male hormone production does result from grafting, it may do so from the direct effects of operative interference and from the presence of a foreign body (the graft) stimulating the blood supply to the scrotum and its contents (the host testis) and thus increasing its function in regard to hormone production. The effect would thus be analogous to that said to follow the Vaso dilator method of rejuvenation following Doppler's technique.[14]

The Clinical Effects of Grafting.

It is evident that in these experiments rapid absorption of the grafted testicular tissue occurred. This conforms to the findings in the Histology Group, where no grafts were recovered three months after operation. Unfortunately, the single grafted animal in the Rejuvenation Group died 24 days after grafting, but from the experience of one of us (R.M.C.G.) testicular grafts in old animals generally take longer time to become absorbed and may be distinctly palpable at least 18 months after operation.

In the Production Group the greatest estimated size of palpable grafts five months after grafting was only that of a walnut and the average size about that of a broad bean seed. At this time all the grafts could be accounted for and none had become entirely absorbed. This reduction in size of grafts is considerable seeing that the original

size of the pieces of grafted tissue was about 3-in. by 2-in. by ½-in. By ten months after grafting only 25 per cent. of the grafts were palpable, less than this number could be accounted for as lost by sloughing, so that more than 50 per cent. had been entirely absorbed. By 12 months only one graft remained palpable (less than 10 per cent.) and 75 per cent. apparently had become entirely absorbed. Had this very rapid absorption been anticipated, more frequent clinical examinations would have been made in order better to determine the rate of absorption. There appears to be no correlation of the persistence of grafts to any increase in body weight or wool production.

Our results closely conform to those of the South African workers who found that the size of the grafts commences to decrease at two-and-a-half to three months and that they are lost between eight and 12 months and in some cases even as early as six months. The slightly smaller size of grafts implanted and the greater youth of the receptor animals probably account for the slightly more rapid absorption in the cases cited by them.

The injection of pulped testis into the scrota appears to have had no noticeable clinical effects.

Scars of the grafting operation wounds were scarcely noticeable in most cases, but fairy considerable scars were left in the two cases in which the grafts were known to have sloughed. It may be assumed from this that neat aseptic operations are unlikely to be followed by considerable scars, yet the British delegation in its report[15] states that "scars were present on the scrota of the grafted groups." It is suggested that the scars in this case may have been the result of the sloughing of grafts.

The actual operation undoubtedly did give a temporary setback to the grafted animals, but no such effect was noticeable in those receiving injections of pulp and yet the latter show the same tendency to decrease in wool production as in controls and grafted animals. The averages were as follows:—

In the Production Group wool production of grafted animals decreased 51 per cent., that of those receiving injection of pulped testes 43 per cent., and that of the controls 43 per cent.

In the Rejuvenation Group, in which there was but a single animal in each lot, decrease in wool production was 47 per cent. in that receiving injections of pulp, 52 per cent. in that receiving injections of extract of testes and 54 per cent. in the control. Such figures are far from conclusive and the differences may well be regarded as due to individual variation.

As regards the other characteristics of the wool of animals in the various lots the changes are so insignificant that at the most we may conclude that the different methods of treatment produced little or no effect in this regard.

Summary and Conclusions.

(1) Apparently normal living, but not growing, testicular and epididymal tissue has been recovered as long as 24 days after grafting merino rams.

(2) Absorption of testicular tissue grafted on to the parietal *tunica vaginalis* of the scrotum appears to be rapid, usually occurring in young rams within one year.

(3) There is no good evidence here provided of any beneficial influence on body weight or wool production as a result of testicular grafting, or of injections of pulped testis or saline extract of testis.

The Veterinary Record.
May 2nd, 1931.

Gland Grafting and its Economic Value.

In this issue of the *Veterinary Record* appear the results of experiments by R. M. C. Gunn and H. R. Seddon on "Testicular Grafts on Rams," also a paper by G. P. Male, read before the Central Veterinary Association, in which he records a series of cases of grafting both male and female animals of different species. The aims of both series of experiments were entirely different.

Those carried out in Australia were instituted to test the validity of certain claims, particularly of Voronoff, that grafting portions of testes on to young rams stimulates reproductive ability and the greater production of wool and flesh; whereas those conducted at Reading over a number of years were to test the practicability of the conclusions arrived at by many experimenters, that aged animals of both sexes may be so rejuvenated and their reproductive organs so stimulated that they will regain their normal functions and produce healthy stock.

In the former experiments the grafts were examined histologically at intervals to show how long these grafts could live in their new surroundings. The lambs and their wool were also weighed and compared with controls. Voronoff's technique was adopted in the operations and the experiments

References.

[1]Quinlan, J., Maré and Roux; *Sixteenth Report of the Director of Vet. Ser. and An. Ind.*, South Africa, 1930, pp. 367-405, 45 figs.

[2]Retterer, E.: *C. R. Soc. Biol.* T. 82, pp. 1022-1025 and pp. 1099-1102.

[3]Retterer, E.: Quoted by Voronoff, S., in *l'Etude sur la vieillesse et le rejeunissement par la Greffe*, Paris, 1926, p. 100; and in *Greffe Animale, les applications utilitaire au cheptei*, 195. *Cong. de l'Assoc. Fran. pour l'avanc. Sci. Lyon*, 1926, p. 23.

[4]Voronoff, S., and Alexandrescu, G. (translated Merrill): "Testicular Grafting from Ape to Man," Paris, 1928, p. 115.

[5]Moore, C. R., and Gallagher: *Amer. Journ. Anat.*, V, 45, No. 1, 1930.

[6]Richter, Curt and Wislocki: *Amer. Journ. of Phys.*, Vol. 86, pp. 651-660.

[7]Balozet, L.: *C. R. Soc. Biol.*, 1927, p. 104.

[8]Velu and Balozet: (*a*) *Bul. Acad. Vét. de France*, Vol. I (1928), p. 342. (*b*) *idem*, Vol. II, pp. 193 and 323. (*c*) *Rév. de Path. Comp*, Tome 28, No. 360, p. 1035.

[9]Gunn, R. M. C.: *Aust. Vet. Journ.*, Vol. 4, No. 2, June, 1930.

[10]Walker, K. M.: *Lancet*, 1924, p. 319.

[11]Moore, C. R.: *Biol. Bul.*, Vol. LV, No. 5, p. 353.

[12]Heller, R. E.: *Phys. Zool.*, Vol. II, No. 1, 1929, pp. 9-17.

[13]Moore, C. R.: *Biol. Bul. Mar. Biol. Lab. (Woods Hole)*, Vol. 55, 1928, No. 5, p. 339.

[14]Zanini, F. C.: *La "Doppler,"* 1928.

[15]Report on Dr. Serge Voronoff's Experiments, Ministry of Agriculture and Fisheries, England, 1928, p. 15.

followed on the lines, in some respects at any rate, of Voronoff's experiments in Algiers, but the results were different. Whereas Voronoff's figures showed at two years old a 1/8th increase in weight and a 1/5th increase in wool, those of Gunn and Seddon rather pointed to a decrease in the body weight and wool in the grafted animals compared with the controls, but, as they state, these figures cannot be taken as conclusive.

Unfortunately, only one aged ram was grafted and he died 24 days after the operation, so it cannot be said if the results were beneficial or not.

In this country, at any rate, the economic value of grafting young rams seems rather problematical, even admitting an increase in weight and wool production, and it would appear to be unnecessary unless the ram had some condition of his genital organs in which stimulation was required. If the ram was vigorous and healthy his testicles would be producing sufficient hormone for the purpose and the excess derived from the graft would be useless. In aged animals of both sexes where through old age, or some other cause, there is a deficiency of hormone or an absence of it altogether, then one sees the value of implanting the gonads from another animal to supply the deficiency, and it was with this in view that G. P. Male commenced his experiments.

The cases he records are very interesting and bear out the conclusions arrived at by other workers. It was suggested in the discussion that the two mares operated upon might have conceived without grafting, but this could hardly be contended in the case of the bitches, in which the grafting was almost uniformly successful even in those cases where œstrum had ceased and where attempts to mate them over long periods had failed.

The evidence of rejuvenation in male animals of different species suggests that in those cases of sterility due to an insufficiency of hormone, grafting may prove of great value to breeders.

It has been suggested that in some way the progeny of grafted animals may be affected by the graft, but it would seem that in these experiments, at all events, the physical characteristics of the donors of the grafts were not transmitted to the offspring; this is also borne out by Voronoff's experiments of grafting human beings with material from the higher apes.

We trust that other operators will record their cases, but, as the essayist pointed out, one must not hope to work miracles or to cure conditions wholly unrelated to a disfunctioning of the ovaries or testes.

Grafting cannot be expected to relieve sterility due to metritis, salpingitis or abnormalities of the cervix, uterus or fallopian tubes: any anticipations of this sort will only bring discredit on an operation which, in suitable cases, may be of much benefit to breeders and owners of valuable stock.

National Veterinary Medical Association of Great Britain and Ireland.

Extraordinary General Meeting.

Lieut.-Colonel P. J. Simpson Elected as President.

Mr. G. P. Male (Vice-President) occupied the chair at an Extraordinary General Meeting of the N.V.M.A. which was held at 10, Red Lion Square, London, W.C.1, on Tuesday, April 7th, 1931, for the purpose of considering the Council's nomination of Lieut.-Colonel Percy J. Simpson for election as President of the Association in place of Professor James Macqueen who had resigned the office on account of ill-health, and, if such nomination were approved, of electing Colonel Simpson as President until the next Ordinary General Meeting of the Association.

There were present, in addition to Mr. Male and the President-elect, Mr. W. H. Brooke, Mr. W. Brown, Professor J. B. Buxton, Mr. J. C. Coleman, Major G. W. Dunkin, Professor S. H. Gaiger, Major F. L. Gooch, Captain O. V. Gunning, Major H. Kirk, Lieut.-Colonel G. P. Knott, Mr. G. T. Matthews, Dr. J. McCunn, Captain S. J. Motton, Major-General Sir John Moore, Mr. W. Nairn, Mr. R. B. Nelder, Major R. H. H. Over, Major D. S. Rabagliati, Mr. W. D. Rees, Lieut.-Colonel G. Rees-Mogg, Mr. H. L. Roberts, Captain R. Simpson, Mr. H. P. Standley, senr., Captain W. K. Townson, Mr. W. Tweed, Mr. W. R. Watson, Dr. A. W. Whitehouse, Mr. J. Willett, Professor G. H. Wooldridge, Professor J. G. Wright and Lieut.-Colonel T. Dunlop Young, together with Mr. C. O. Langley (Solicitor), and Mr. F. Knight (Secretary). Apologies for absence were received from Messrs. H. Bell, H. J. Dawes (Hon. Secretary), R. Hughes, M. Tailby, Captain W. G. Wragg (Hon. Treasurer) and Mr. W. Jackson Young.

The notice convening the meeting having been read by the Secretary, the Chairman said that he had a very pleasant duty to perform that afternoon, and that was to ask the meeting to approve of the Council's unanimous nomination of Lieut.-Colonel Percy J. Simpson to the Presidential chair of that Association. (Cheers.)

They would all know the reason why Professor Macqueen had to resign—on account of ill-health—and they would all regret it, he knew, as much as he did, but the latest news was that Professor Macqueen was progressing very favourably, and he was sure they all hoped that he would soon be with them again. (Hear, hear.)

It needed no words of his to commend that recommendation to them. Colonel Simpson had served his profession faithfully and well over a long period of years, and he deserved well of the profession and especially of that Association. (Cheers.) He had acted on many committees: he had been Chairman of the Editorial Committee, the Finance Committee and other committees and he had carried out all those duties with great distinction. (Hear, hear.)

The profession was passing through troubled times. They were only a small profession and they had many branches, the members doing all kinds of work, and it

required a person of great ability, tact and foresight—one who could look after the interests of all the members in all the branches of the profession impartially, and one who had time at his disposal and who was willing to give it in the service of the Association. Colonel Simpson fulfilled all those qualifications in a marked degree, and therefore he had very much pleasure in asking them to approve of the nomination, if someone would kindly second.

Professor G. H. Wooldridge said that it was with very great pleasure that he seconded the nomination of Colonel Simpson as President of the Association. Nothing needed to be added to the terms in which the Chairman had proposed the nomination to them, he was sure, for it to be carried with acclamation.

The proposition was carried with great enthusiasm and, amid cheers, Mr. Male invested the new President with the gown and chain of office and installed him in the chair with the following words: "Colonel Simpson, you have been elected to the highest office that this Association can confer upon you, and I am glad to think that you will be worthy of the trust and carry on the office with honour and dignity. I have very much pleasure in investing you with the robe of office and in congratulating you."

The President, in acknowledgment, said that he was quite at a loss adequately to express his very deep and sincere thanks to them for having conferred upon him the highest office that that great Association could bestow upon anyone. He could hardly say that that honour had been thrust upon him unexpectedly: he supposed that no incoming President had been so much advertised as he had been, who had had to have a special General Meeting called for his election, with notices sent round to every member of the Association. He had had about three months to think that matter over, and the more he had thought of it the more he had been driven to the conclusion that he had made a mistake in accepting the office, because he did feel, in looking back on the splendid list of names of Past-Presidents, that he should be a very poor substitute for those gentlemen who had occupied that Chair. ("No, no").

There was only one thing he could promise them: he could promise them this, that work would not worry him—he would do all the work he possibly could to further the interests of that Association in the next four months. (Hear, hear.) He should make many mistakes, but there was an old saying "to err is human; to forgive, divine," and he thought that they would have many opportunities of exercising that divine right. He should look to them, therefore, for as much support as they and other members of the Association could possibly give him during his year of office and, in return for that, he would try and do his best for the Association. (Loud cheers.)

Vote of Thanks to the Retiring President.

There was one thing he must do before resuming his seat, and that was to propose a vote of thanks to the retiring President, Professor Macqueen, for having done all that he possibly could for the Association under very trying circumstances. (Cheers.) He was sure, as had already been referred to by Mr. Male, that they had all, at the back of their minds that day, a deep feeling of regret at the cause of Professor Macqueen's inability to be present with them. (Hear, hear.) At the same time, they felt that they must accord him their most grateful thanks for doing the work he had been able to do until such time as his malady made it imperative that he should give up. (Cheers.) Therefore he proposed from the chair "That this meeting accords Professor Macqueen a very hearty vote of thanks for the work he was able to do in the capacity of President, N.V.M.A., up to the time of his being laid by, and at the same time expresses deep sympathy with him in having to relinquish the office from this cause. This meeting learns with relief and pleasure of Professor Macqueen's steady progress towards health and strength and expresses the sincere hope that he will be with the members of the Association at their Norwich meeting."

Proceeding, the President observed that he had a pleasant office to perform in proposing a hearty vote of thanks to Mr. Male for having stepped into the breach when Professor Macqueen could no longer carry on; he desired it to be recorded on the minutes that a cordial vote of thanks be accorded Mr. Male for his kindness in coming forward and filling the breach.

Professor J. B. Buxton said that he had very much pleasure in seconding that. He was sure they owed a very deep debt of gratitude to Mr. Male for all he had done for them. (Loud cheers.)

Mr. G. P. Male expressed his gratitude for the enthusiastically-accorded vote of thanks. It had been a very great pleasure to him to do anything he could for the Association and especially to help Professor Macqueen in his disability. He might say that Professor Macqueen, up to the very moment that he was laid by, continued to take the very keenest interest and worked extremely hard for the Association; for example, the morning that the deputation went down to the Ministry of Agriculture, Professor Macqueen, against doctor's orders, and with a temperature, attended at the Charing Cross Hotel to go over the evidence that was to be given, and he gave his advice although he could not himself accompany the deputation. That showed his keenness and enthusiasm, and he was sorry that Professor Macqueen could not be there personally to respond to the vote of thanks which he so thoroughly deserved. (Hear, hear.)

That, concluded the Chairman, terminated the Extraordinary General Meeting.

Quarterly Meeting of Council.

The newly-elected President, Lieut.-Colonel P. J. Simpson, occupied the chair at the Quarterly Meeting of Council, N.V.M.A., which followed immediately upon the Extraordinary General Meeting. That meeting having been open to all members, the President requested any non-members of Council to withdraw and called for the minutes of the last Council meeting.

Those present, in addition to the President, were Mr. W. H. Brooke, Professor J. B. Buxton, Mr. J. C. Coleman, Major G. W. Dunkin, Professor S. H. Gaiger, Captain O. V. Gunning, Major H. Kirk, Mr. G. T. Matthews, Captain S. J. Motton, Major-General Sir John Moore,

Mr. W. Nairn, Mr. R. B. Nelder, Major R. H. H. Over, Major D. S. Rabagliati, Mr. W. D. Rees, Captain R. Simpson, Mr. H. P. Standley, senr., Captain W. K. Townson, Mr. W. Tweed, Mr. W. R. Watson, Dr. W. A. Whitehouse, Mr. J. Willett, Professor G. H. Wooldridge and Lieut.-Colonel T. Dunlop Young, together with the Solicitor (Mr. C. O. Langley) and the Secretary (Mr. F. Knight).

The *minutes* of the January meeting of Council, having been published in the *Veterinary Record*, were taken as read and were confirmed, on the proposition of Major Over, seconded by Mr. Coleman.

Arising therefrom, the Secretary read a letter from Professor Macqueen thanking the Council for their expression of sympathy with him in his illness, and for their good wishes.

The receipt was also announced of a letter from Mr. W. Tweed, informing the Council that he had been appointed Chief Veterinary Officer for Sheffield at a salary of £700, and thanking the Council for their support and confidence "which have been the means of upholding the dignity of the appointment and the veterinary profession in this city."

This communication was received with applause.

The Secretary reported that, also arising, a number of replies had been received to the resolution passed at the last meeting of Council with regard to the Royal Veterinary College, including letters from Lord Harewood, Lord Mildmay of Flete, Lord Passfield, Mr. J. H. Thomas and a number of other Members of Parliament, and the following, from the Minister of Agriculture:—

Ministry of Agriculture and Fisheries,
10, Whitehall Place,
London, S.W.1.
January 12th, 1931.

Sir,

Royal Veterinary College.

I am directed to refer to your letter of the 12th instant, and to say that the resolution passed by the Council of your Association at their meeting on the 6th instant regarding the position of the Royal Veterinary College has been noted.

I am to add that the Minister has done, and will do, everything in his power to ensure the continued existence of the College.

I am, Sir,
Your obedient Servant,
George Thomas.

The General Secretary,
National Veterinary Medical Association of
Great Britain and Ireland,
2, Verulam Buildings,
Gray's Inn,
London, W.C.1.

The Minister's letter was greeted with loud applause.

Further arising, the Secretary read the following letter which had been received from the Secretary of the Royal College of Veterinary Surgeons:—

January 19th, 1931.

Dear Mr. Knight,

Your letter of the 7th instant containing a copy of the resolution passed by the Lancashire Division regarding the insertion of telephone numbers in the register was carefully considered by the Publications Committee at its meeting on Friday last. As you may be aware, this question has been examined on more than one occasion by the Committee. The Committee again came to the conclusion that at the present time it cannot recommend any alteration to the register which would involve additional work and expense. The staff is already overburdened, and the condition of the finances is such that every economy has to be practised.

Yours faithfully,
Fred Bullock.

Arising out of the minutes of an earlier meeting of Council, the Secretary read a letter from the Ministry of Agriculture and Fisheries, dated April 2nd, in the following terms:—

"With further reference to your letter of July 17th last, conveying a resolution adopted by the Council of the National Veterinary Medical Association, with regard to the desirability of setting up a Royal Commission to enquire into the incidence and control of bovine tuberculosis, I am directed to say that the Ministry has given this matter its careful consideration but is of opinion that the circumstances do not warrant the establishment of a Royal Commission on this subject at the present time."

There being no response to the President's invitation to the members to discuss the matters arising, the next business was proceeded with.

Correspondence.

(1) The receipt of apologies for their inability to attend the meeting was announced from Mr. H. Bell, Dr. O. Charnock Bradley, Mr. David Brown, Mr. F. A. Davidson, Mr. H. J. Dawes (the Hon. Secretary, who was recovering from an attack of influenza), Professor F. T. G. Hobday, Mr. P. J. Howard, Mr. Richard Hughes, Major T. M. Inglis, Mr. N. H. McAlister, Mr. J. W. McIntosh, Major Peele, and the Hon. Treasurer (Captain W. G. Wragg).

(2) From Mr. H. P. Lewis, M.R.C.V.S., Chief Food Inspector, Hull Corporation Health Department, requesting that the Association should extend an invitation to the Cleansing and Sanitary Committee of the Hull Corporation to send two delegates to the forthcoming Congress at Norwich in August.

The Secretary observed that, on receipt of that letter, he conferred with the President and wrote Mr. Lewis, enquiring whether he was able to say who the two delegates to be appointed by the Hull Cleansing and Sanitary Committee were likely to be, as hitherto it had been the Association's practice not to extend invitations to delegates from outside bodies.

Mr. Lewis replied in the following terms:—

"I am in receipt of your letter of the 12th instant and must say that I am very disappointed at the contents. The Royal Sanitary Institute make a point of inviting delegates from all the principal towns in the United Kingdom and in this way the Sanitary Inspector gains a distinct advantage over the Veterinary Inspector in municipal affairs. This procedure was also adopted at the last International Veterinary Congress, and why the National should refuse to do likewise I fail to understand, as I have no hesitation in saying that it is a narrow-minded and mistaken policy. In my case it will mean that I shall not be able to attend the Congress because my committee will not delegate me alone, but would undoubtedly do so along with a member of the Committee. Unless the invitation is received at the next meeting of the Committee on May 18th it will mean that the matter will not be

considered until the following meeting which is five weeks later, and this will probably be too late to secure hotel accommodation. I sincerely hope that you will find a means of overcoming the difficulty."

Upon receipt of that communication, concluded the Secretary, he promised Mr. Lewis that he would lay his letters before the Council.

The Chairman asked the Council to note that the Association had not refused Mr. Lewis in any shape or form: they had simply said that it was not the custom to extend invitations to outside bodies, and that his application would be considered, but that it had been the rule in the past not to have delegates other than veterinary surgeons at the Association's Congresses. It was for the Council to consider whether they desired to continue that custom or not, on this occasion.

After discussion, in which Professor G. H. Wooldridge, Colonel Dunlop Young and Major D. S. Rabagliati took part, it was proposed by Professor Wooldridge, seconded by Mr. W. Tweed and unanimously agreed "That all Local Authorities employing a Veterinary Inspector for the purposes of the Diseases of Animals Acts should be invited to send their Veterinary Inspector as an official delegate to the Association's Congress, a delegate's fee of £2 2s. being required from any delegate who is not already a member of the Association."

(3) From Major R. F. Wall complaining of the unsatisfactory fees paid by insurance companies to veterinary surgeons for the examination of and report on animals proposed for insurance.

After discussion, it was decided to refer this matter to a special committee for consideration and report, and the following were appointed to serve: Major F. L. Gooch, Mr. G. P. Male, Major R. H. H. Over, Mr. H. L. Roberts, Mr. H. P. Standley, senr., and Professor G. H. Wooldridge.

Gift.—The Secretary reported that Captain D. Hamilton, F.R.C.V.S., of Harrogate, had presented to the Association three bound volumes of the *Veterinary Record,* and was instructed to express to Captain Hamilton the Council's warmest thanks for the gift.

National Horse Association.

The Secretary read the following communication which had been received from the Secretary of the National Horse Association of Great Britain:—

"I submitted to the Council of this Association at their recent meeting an account of the Association's activities in connection with Bills before Parliament which affect the horse or its use. To enable all associated societies to be fully conversant with what is being done in this direction, I was instructed to send you the enclosed short account which it is hoped will meet with the approval of your Council.

"*Corporation Bills.*—As a result of the Association's Parliamentary work, it has been found that many corporations are including in their Local Bills small clauses which, if put into force, will restrict the rights of horse users. Consequently, the Council feel that thorough consideration must be given to such proposals and adequate protest made if such proposals are against the public interest. Roughly, 150 of these Corporation Bills are passed through the House of Commons annually and do not come up for general discussion in the House.

"*Parliamentary Agents.*—The Council have decided that it is extremely desirable to appoint official Parliamentary agents and have accordingly engaged the services of a competent firm to look through every Bill promoted with a view to advising and directing the Association in such matters.

"Such expert assistance will naturally involve the Association in considerable expenditure, but the Council feel that this is justified if it ensures that the interests of associated societies are safeguarded.

"I am to express the hope that your Council will feel that their kind support of the Association is proving beneficial to the interests represented by your Society."

The enclosure was as follows:—

Report of the Parliamentary Work of the National Horse Association.

Road Traffic Act.—This measure was watched carefully during its passage through the House of Commons and Mr. Nigel C. Colman (a Member of the Council) drew the attention of the House to the way in which horse users would be affected. Subsequently, the Minister of Transport was persuaded to accept two amendments, the first of which laid it down to be the duty of all Highway Authorities to provide adequate grass or other margins for ridden horses or driven livestock wherever necessary or desirable. The second amendment increased the maximum speed allowed to heavy motor horse boxes with pneumatic tyres from 20 to 30 miles per hour.

Highway Code.—Careful attention was paid to this and a list of points which should be included was drawn up by the Association and submitted to the Minister of Transport. These suggestions covered such questions as the rule of the road for *ridden* and *led* horses, the giving of signals by drivers of carts or carriages, the necessity for motorists to give consideration to horse users, to stop if signalled to do so by those in charge of animals and to allow plenty of room when passing them.

The Minister accepted the majority of these points and a further representation was made on the issue of the draft code. This was followed by representatives of the Association attending a Joint Conference at the Ministry of Transport on January 22nd, 1931.

Corporation Bills.—Some 60 Corporation Bills which have been introduced into Parliament have been carefully examined by the Parliamentary Agents of the Association with a view to ensuring that nothing detrimental to the interests of horse users should be included in them.

Several bills have included clauses giving the Corporations power to forbid horses, cattle or vehicles to be ridden or driven over grass margins forming part of the highway. The Association has taken steps to have these clauses so amended as to make the restrictions only applicable to margins which are maintained in a definitely ornamental condition on housing estates, etc., but some difficulty has been experienced in arriving at an agreed formula of words for such margins.

In the present session of Parliament, only two Corporations have sought such powers. In the case of Blackburn, the whole Bill has been dropped. In the case of Doncaster, negotiations are still being carried on with a view to ensuring that the ordinary privilege of riding on roadside margins shall not be interfered with.

Horse Traffic in London.—The movement to exclude Horse Traffic from London streets has been carefully watched and arrangements made to oppose it as far as possible, while several questions relating to the subject have been asked in Parliament on behalf of the Association. At their meeting on December 11th, 1930, the Council adopted the following resolution:—

"The Council, on behalf of the 94 horse owners and breed societies associated with its work, protest most strongly against any proposal to restrict the use of horse traffic in certain London streets. A very serious blow would be dealt to the horse breeding and farming industry generally consequent upon inability to dispose of young stock. Further, such proposals would doubtless lead to the dismissal of many transport employees who have not the required knowledge to handle mechanical transport and who at the present time would doubtless have considerable difficulty in securing other employment. Finally, the proposals would mean that hundreds of small traders

would be unable to use the horse, which is not only their best, but only form of transport."

Sir John Moore stressed the necessity for the according by the N.V.M.A. of the greatest possible measure of support to the National Horse Association in its efforts to combat the movement to restrict horse transport in London. The Association was already sending delegates to the Ministry of Transport to fight the battle for the horse, and many points had been gained in connection with the Highway Code, but they still had many items on the programme to put before the Ministry of Transport, and if the "National" could help them, say, by sending a delegate should the occasion arise, the N.H.A. would be very pleased. The representative of the N.V.M.A. on the Council of the National Horse Association was Mr. J. W. McIntosh, while Mr. Walter Perryman represented the Central Veterinary Society.

The Chairman said that doubtless they would all agree that the letter and enclosure from the National Horse Association should be published in the *Veterinary Record* in the minutes of that meeting ["Aye."] The Council would also like a letter to go saying that the Association was quite willing to take any action that was possible in the interests of the horse, and to support the National Horse Association to the best of their ability. (Hear, hear.)

Victoria Veterinary Benevolent Fund.—The following communication from the Secretary of the Fund was read:—

Dear Mr. Knight,

I am directed by the Council of the Fund to ask you to express to your Council our cordial thanks for so generously giving us a free advertisement in the *Veterinary Record* regarding the Garnett Annuity.

No application was, as a matter of fact, received in response to the advertisement, but the Council feel that to be all the more satisfactory.

Yours faithfully,
F. W. Bullock, *Secretary.*
Victoria Veterinary Benevolent Fund.
January 21st, 1931.

Membership of the Association.

The Secretary reported that the number of Members of the Association at March 31st, 1931, was 1,639.

Resignations.—The resignations of the following members, which had been received during the past quarter, were accepted, with regret, on the proposition of Major Dunkin, seconded by Mr. Willett: Messrs. C. Crowne, P. Leckie, M. I. Malik and C. Wood Page.

Obituary.—The Council stood while the Obituary List was read by the Secretary, as follows:—

Major C. K. Calder, Mr. P. W. Creagh, Capt. J. A. Fearnside, Messrs. M. T. Gibbin, W. Hill, H. L. Hobson, Major H. Kirby, Messrs. W. Noar, W. H. Macfarlane and J. S. Wheatcroft.

New Members.—The following gentlemen, who had filled in the approved forms of application and paid their subscriptions for the current year, were elected to membership, on the proposition of Mr. Coleman, seconded by Major Over:—

Messrs. A. L. Batholomew (Rutherglen); E. B. Bartlett (Exeter); J. J. Brennan (Cork); J. W. E. Budge (London); R. M. Davidson (Banff); D. E. Davies (Llanybyther); W. Denington (St. Albans); K. J. S. Dowland (Lincoln); T. M. Doyle (Weybridge); J. B. Garside (Congleton); H. D. Gilmore (Kirkcubbin); J. Heffernan (Ballina); W. J. G. Jones (Newry); G. C. Knight (Wimbledon); H. V. Low (Norwich); J. McArthur (Livingstone); D. Mossinson (Spilsby); P. Mulcair (Monmouth); P. E. Mullaney (Dublin); J. O'Kane (Broughton); H. O'Neill (Lifford); Major F. C. O'Rorke (R.A.V.C.); W. Orr (London); E. D. S. Robertson (Edinburgh); R. H. Robertson (Edinburgh); P. A. Rogan (Dundrum); J. G. Ross (Wakefield); A. Sams (Walton-on-Thames); H. C. Shingler (Banbury); Major W. S. Stevens (R.A.V.C.); T. W. Stobo (Sudan); E. R. D. Storrar (Upton-on-Severn); James B. Taylor (Dumfries); T. F. Tunney; Andrew Walker (Sheffield) and D. E. Wilkinson (Chigwell).

The President commented that that list of 38 new members was a very cheering one. (Applause.)

Veterinary Advisory Officers.

The next business before the Council was to receive the report of the committee appointed to approach the Ministry of Agriculture regarding the duties of Veterinary Advisory Officers.

The President observed that Mr. McIntosh was chairman of that committee, but unfortunately he was unable to be present that afternoon. He had, however, sent a letter which he would ask the Secretary to read.

This having been done, the President called upon Mr. Male to present the Committee's report.

Mr. G. P. Male prefaced the report with a brief statement, in the course of which he said that, as the Council would remember, on April 1st of last year a sub-committee was formed to consider the list of duties, etc., of Veterinary Advisory Officers, and this committee was instructed to draw up a report on that matter. He was sorry that Mr. McIntosh was not there, as he was Chairman of the Committee, but the latter had asked him to read the report.

The report having been read, Mr. Male said that the Ministry were asked by the deputation if they would give them their views, which could be published so that the profession might know exactly how they stood with regard to that matter. The Ministry replied, forwarding a draft statement summarising the discussions with representatives of the Association and promising to forward in due course a copy of the revised list of duties of Veterinary Advisers, which list was in course of preparation.

Mr. Male now read the draft statement referred to, and after discussion the following resolution was passed. "That the Council expresses its appreciation of the Ministry's statement, but at the same time regrets that they were unable to see their way to attach the Veterinary Advisory Officers to Institutes, in order that research might be co-ordinated and guided by the Directors of those Institutes; also that the verbal alteration suggested by the Association should be included in the statement when agreed to by the Ministry."

The motion was seconded by Captain R. Simpson and carried unanimously.

On the proposition of Mr. Male, seconded by Captain Motton, the report of the Committee was adopted.

Mr. J. Willett expressed his desire that there should be recorded in the minutes an appreciation of the work done by the deputation and of the largely satisfactory results that had accrued from their appearance before the Ministry.

Dr. Whitehouse seconded, and the President observed

that he was sure they all agreed with that recommendation. (Hear, hear.). He was aware, from a little internal knowledge, that those gentlemen had worked very hard on their behalf.

Reports of Committees.

Finance and General Purposes Committee.

The Secretary read the following report of this committee, of which the President is Chairman :—

Two meetings of the Finance and General Purposes Committee have been held during the past quarter.

The annual subscription of £10 to the Victoria Veterinary Benevolent Fund has been paid, and the Committee recommends to the Council that a special donation of £50 be made to this Fund.

After full consideration of the proposal made at the January Council Meeting, it was decided to recommend that telephone numbers should be shown in the printed List of Members of the Association issued with the Annual Report and Balance Sheet. The initial cost would be between £18 and £20.

The Association's membership of the National Horse Association has been renewed for the present year.

A policy has been effected insuring the Association and the printers of the *Veterinary Record* for the next 12 months against the risk of actions for libel arising from matter published in the Association's journal during that period.

The Committee has been kept informed of the progress made in the collection of membership subscriptions, and everything possible is being done to secure the payment of subscriptions in arrear.

The finances of the Association since January last will be dealt with by the Hon. Treasurer in his report.

The President moved the reception of the report and, Major Kirk having seconded, invited discussion.

After a pause, the President proceeded to say that, with regard to telephone numbers, it was very doubtful if they would be able to get anything like a complete list in this year's "Handbook." This would, however, be made complete as soon as possible, and a notice would be inserted in the *Record* asking for them. The report was adopted, on the proposition of the President, seconded by Mr. Coleman.

Hon. Treasurer's Report.—In the absence of the Hon. Treasurer, the Secretary read a report from the former on the finances of the Association for the months of January and February. This report, which was of a satisfactory nature, was adopted, on the proposition of Colonel Young, seconded by Major Rabagliati.

Editorial Committee.

Sir John Moore (Chairman) read the following report of this Committee and moved its reception :—

A regular feature of the *Record* throughout the period under review has been the continued publication of abstracts of papers presented to the International Veterinary Congress. This series will shortly be terminating and consideration will then be given to the question of reproducing reports of the discussions as they become available.

With the approach of the Association's Annual Congress the Committee have commenced monthly publication, as an inset, of a series of articles on the City of Norwich accompanying the provisional programme, and it is hoped that by this means interest in the meeting will be aroused and will culminate in a record attendance.

The *Veterinary Record* exchange list has been augmented during the past quarter by the Swedish Journal *Svensk Veterinartidskrift*, and arrangements have been made for the provision of abstracts therefrom.

In view of the fact that it is 50 years this year since the passing of the Veterinary Surgeons' Act, 1881, which first gave the veterinary profession its legal status, the Committee have in contemplation the publication of a retrospect over that period and are in touch with various possible contributors.

The advertisement pages of the *Record* have been maintained at a satisfactory number, there being no important defections or acquisitions to report. New display advertisements are difficult to obtain during the prevalent trade depression, though every effort is made to secure them. It is satisfactory to note that firms with a long advertising connection with the *Record* are taking as large a space as in former years.

Major Rabagliati seconded the motion for the reception of the report and, there being no discussion, it was adopted, on the proposition of Major Kirk, seconded by Mr. Willett.

Appointments Committee.

The following report of this Committee was read by its Chairman (Dr. Whitehouse), who moved its reception :—

A meeting of the Appointments Committee was held at 2, Verulam Buildings, Gray's Inn, W.C.1, on Tuesday, April 7th, 1931.

In the absence of Professor Buxton, Dr. Whitehouse was appointed Chairman of the meeting.

Arising from the minutes, it was reported that the Clerk of the Derbyshire County Council had been communicated with as instructed. The County Council had, however, since decided not to proceed with the proposed appointment of whole-time Veterinary Officers.

Consideration was given to a communication from Mr. L. E. W. Bevan, of Salisbury, Southern Rhodesia, pointing out that the issue of the *Veterinary Record* of January 24th, containing an advertisement of the post of Veterinary Advisory Officer for the Eastern Counties, had arrived in Rhodesia 12 days after the closing date for the receipt of applications.

It was resolved to reply to Mr. Bevan that the Editorial Committee would be asked to endeavour to secure an extension of the time for the receipt of applications from abroad, in the event of similar cases arising in the future.

The Secretary asked for a ruling by the Committee on the question whether the Association's scale of minimum salaries for whole-time Veterinary Officers covers pensionable Government posts, the point having been raised by a member.

A ruling was accordingly given that this scale applies to all appointments as whole-time Veterinary Officer made by Governments or Local Authorities in the United Kingdom and the Irish Free State, and whether pensionable or otherwise.

Discussion of the report having been invited by the President,

Professor J. B. Buxton said that, with regard to the last paragraph, he desired to suggest that, before the Council accepted a definite ruling that the Scale applied to all appointments as whole-time Veterinary Officers made by Governments or Local Authorities in the United Kingdom and the Irish Free State, and whether pensionable or otherwise, the question be referred back to the Committee for further consideration. He was a member of the Committee, and he was thus sorry to bring it up, but he was unable to get to the Committee in time for the discussion on that matter which had taken place that morning.

On the proposition of Captain Rider, seconded by Captain R. Simpson, the report was adopted, subject to the reference back of the final paragraph.

Parliamentary Committee.

Mr. J. C. Coleman (Chairman) read the report of this Committee, as follows, and moved its reception :—

A meeting of the Parliamentary Committee was held at 2, Verulam Buildings, Gray's Inn, W.C.1, on Tuesday, April 7th, 1931.

The minutes of the previous meeting were read and signed as correct.

Arising from the minutes, the following letters were read :—

(i) From the Ministry of Agriculture acknowledging receipt of the Association's representation asking that steps may be taken to prohibit the use of swine erysipelas serum except under qualified veterinary supervision, and saying that the question raised is receiving the consideration of the Ministry in connection with the general question of the regulation of the management and sale of therapeutic substances intended to be used for veterinary purposes.

(ii) From the Ministry of Agriculture relative to the resolution recently passed by the Council of the Association on the subject of the marking and control of the importation into Great Britain of biological products for use in animals, and intimating that the question is at present receiving the consideration of the Ministry.

(iii) From the Private Secretary to the Minister of Mines acknowledging the receipt of the Association's letter of January 17th, together with the report of the Mining Sub-committee on the Coal Mines (Protection of Animals) Bill.

(iv) From Mr. J. R. Hayhurst concerning the Slaughter of Animals Bill and detailing the steps which were being taken by the Corporation of the City of London with a view to securing the deletion from Clause 4 of the Bill, of the words " and the officer of any society or institution for the protection of animals authorised by the Ministry of Health for that purpose."

It was understood that neither of the following Bills had made any progress since the last meeting of the Committee :—

Protection of Dogs.
Coal Mines (Protection of Animals).

The Secretary reported that the Parliamentary Committee of the Royal College of Veterinary Surgeons had agreed to the suggested joint meeting in regard to the Chelmsford Committee on Public Health legislation, and that it had been arranged for the Sub-committee nominated by them to meet representatives of the Association to-morrow (Wednesday), April 8th.

Further consideration was given to the question of the exemption of veterinary surgeons from jury service.

It was decided to ascertain by letter the views of the Home Office on this matter. The drafting of the letter was left in the hands of the President and the Chairman of the Committee.

Mr. J. Willett seconded the motion for the reception of the report.

Replying to Professor G. H. Wooldridge, Mr. Coleman said that the question of the exemption of veterinary surgeons from jury service was to be considered at the next meeting of the Committee.

The report was adopted, on the proposition of Major Rabagliati, seconded by Colonel Young.

Joint Meeting of Parliamentary and Veterinary Officers & Public Health Committees.—Mr. G. P. Male read and moved the reception and adoption of the report of the meeting, as follows :—

A joint meeting of the Veterinary Officers' & Public Health and Parliamentary Committees was held at 2, Verulam Buildings, Gray's Inn, on Tuesday, April 7th, 1931.

The minutes of the previous meeting were read and signed as correct.

Consideration was given to the salaries fixed by a County Council for part-time Veterinary Inspectors under the Local Government (Scotland) Act.

It was decided to defer action pending further developments.

Mr. Rees having seconded the motion, the report was adopted without discussion.

Veterinary Officers and Public Health Committee.

The following report of this Committee was also read by Mr. Male (Chairman), who moved its reception :—

The Veterinary Officers' and Public Health Committee has held two meetings during the past quarter.

A memorandum dealing with veterinary appointments under Local Authorities has been forwarded on behalf of the Association to the Departmental Committee appointed by the Minister of Health " to inquire into and make recommendations on the qualifications, recruitment, training and promotion of Local Government Officers," and Professor Buxton, Major De Vine, Mr. Male, Major Rabagliati and Sir John Moore have been chosen as witnesses. A reply has been received saying that the Association will be informed at a later date whether the Departmental Committee wish the memorandum to be supplemented by oral evidence.

The Committee has been supplied by the Society of Medical Officers of Health with a copy of the evidence with regard to Veterinary Officers submitted by that Society to the same Departmental Committee.

In compliance with the instructions of the Council, the Committee has drawn up a scheme for the Eradication of Bovine Tuberculosis in England and Wales, which it now submits for the approval of the Council. This scheme, a copy of which has been circulated to all members of the Council, is based on that prepared by the Scottish Branch, the details of the Scottish scheme having been altered to meet conditions prevailing in England and Wales.

In view of the receipt of letters from the Organising Secretary on the subject, further consideration has been given by the Committee to the question whether the Association should be represented at the International Dairy Congress, 1931, Copenhagen.

It was resolved to recommend to the Council :—

(*a*) That a delegate be sent to this Congress.

(*b*) That the delegate be the President of the Association or his nominee.

(*c*) That the delegate's expenses be paid up to the sum of £25.

The text of the scheme to which reference was made in the report, is as follows :—

National Veterinary Medical Association of Great Britain and Ireland.

Scheme
FOR THE
Eradication of Bovine Tuberculosis (England and Wales).

1.—The Veterinary Officers' and Public Health Committee of the National Veterinary Medical Association of Great Britain and Ireland has carefully considered the question of the eradication of bovine tuberculosis and has discussed very fully the Scheme, prepared by the Scottish Branch of the Association, which has been amended, as follows, to meet conditions prevailing in England and Wales.

2.—In view of the serious losses incurred by stock owners through bovine tuberculosis, and its bearing on public health, the Association urges the necessity for a definite attempt being made to eradicate tuberculosis from herds in England and Wales.

3.—The Association recognises the progress which has been made in North America by the use of tuberculin and the slaughter of reactors, and also in Denmark and elsewhere by the method of dealing with the disease associated with the name of Bang.

4.—In view of the probable percentage of reactors in British herds, it appears impracticable to apply the American plan immediately in any widespread campaign in this country. The Association has considered carefully the best means available for dealing with this problem of tuberculosis eradication, and believing that a combination of the American and the Bang methods is best suited to the needs of this country, recommends the adoption of the measures hereinafter described.

5.—*Control.*

As the eradication of tuberculosis is essentially a live

stock problem, the control of the scheme should rest with the Ministry of Agriculture and Fisheries.

6.—*Accredited Herds.*

The first step should be towards the eradication of the disease from selected herds with a view to providing a reserve of tuberculosis-free cattle which would be available to replace reactors in the herds to be dealt with later.

7.—To inaugurate the scheme, application should be invited from owners desirous of taking advantage of the benefits conferred thereby and prepared to conform to the regulations governing the scheme as laid down by the Ministry. In selecting herds preference should be given to—

(1) Herds in which the incidence of tuberculosis is believed to be low.
(2) Self-supporting herds.
(3) Pedigreed and milk-recorded herds; and
(4) Herds so situated as to facilitate the formation of ACCREDITED AREAS which is dealt with in a later part of the scheme.

8.—The selected herds should be tested with tuberculin in such manner as may be laid down by the Ministry from time to time, and the reactors dealt with as circumstances permit. Where the number of reacting animals is sufficiently small that their immediate removal is economically practicable, they should be slaughtered and an equitable compensation paid to the owner. Where immediate removal is impracticable, the reactors should be segregated from the non-reactors. The detailed scheme should make provision whereby an owner, whose reactors are isolated under the Bang method, might choose at any time, where circumstances permit, to have his remaining reactors slaughtered and receive compensation.

9.—The tuberculin testing should be carried out by a practitioner selected by the owner until he reports that the regulations laid down by the Ministry have been complied with and that he has tested the whole herd without finding a reactor, when the crucial or determining test should be applied by a veterinary surgeon approved by the Ministry.

10.—If no reactors be found at this crucial test, the herd should be added to a list of ACCREDITED HERDS which should be kept by the Ministry—an "ACCREDITED HERD" being a tuberculosis-free herd which has been certified by the Ministry as having passed its crucial test—and the herd should then be governed by the conditions laid down for the maintenance of an ACCREDITED HERD.

11.—As the number of ACCREDITED HERDS and the reserve of tuberculosis-free animals increase, an increasing number of herds should be dealt with by slaughter of reactors in lieu of isolation, so far as the funds available for the financing of the scheme permit.

12.—No animal should be added to an ACCREDITED HERD unless it has come from an ACCREDITED HERD or has been twice tested with an interval of a specified period between the tests and during such intervals has been kept isolated from other bovine animals.

13.—All reactors should be indelibly marked, and, in herds where the Bang method is practised, should only be disposed of for slaughter. The Association realises that special provisions will be necessary to meet the case of a valuable breeding animal which reacts.

14.—*Accredited Areas.*

As there is an admitted difficulty in maintaining a tuberculosis-free herd in the midst of surrounding infected herds, the next step in the eradication of the disease should be the formation of ACCREDITED AREAS with a view to reducing the risk of re-infection of free herds.

15.—It will be obvious that before this step can be taken a considerable reservoir of young tuberculosis-free cattle will have been formed through the operation of the ACCREDITED HERDS scheme.

16.—Areas to which this part of the scheme is to be applied should be selected and delimited by the Ministry in consultation with the Local Authority and local practitioners. These areas should be formed on the application of any owner in a district where either 75 per cent. of the cattle are in herds which are accredited or in process of accreditation, or 75 per cent. of the herds are accredited or in process of accreditation, and, on such an area being formed, the remaining herds should be dealt with compulsorily in the same manner as those whose owners had come into the scheme voluntarily.

17.—As eradication progresses and the size and number of free areas increase, it might be possible to hasten progress by reducing the percentage of cattle or herds required for the formation of a free area, from 75 per cent. to 60 per cent. or even 50 per cent.

18.—In the formation of ACCREDITED AREAS the Association recognises that difficulties will arise regarding the interference with the normal cattle trade of the area, particularly with reference to the importation of stock from outside the area, and the Ministry will require to make regulations to guard against the risk of infection through imported stock which may be necessary for particular areas.

19.—*Compulsory Areas.*

Before eradication is completed it may be necessary for the Ministry to adopt compulsory measures to deal with those parts of the country from which tuberculosis has not been eradicated by the foregoing measures. These residual parts of the country should be designated COMPULSORY AREAS, and the herds therein should be dealt with in the same manner as those whose owners had come into the scheme voluntarily.

20.—*Maintenance of Accredited Herds.*

Regulations will be necessary to govern the maintenance of ACCREDITED HERDS, and these should be framed by the Ministry. The Association recommends that an ACCREDITED HERD should be tested twice a year. A copy of the report of the tests must be sent to the Ministry by the veterinary surgeon. Any reactor discovered at such tests should be removed from the herd without delay and a herd in which more than 5 per cent. of reactors is discovered should be temporarily suspended from the list of ACCREDITED HERDS. Such a herd should be retested after a suitable interval by a veterinary surgeon approved by the Ministry, when, if no reactors be found, the herd should be restored to the list of ACCREDITED HERDS. Should, however, reactors be found at this later test, the herd should be dealt with as is laid down in the first part of the scheme with reference to the formation of ACCREDITED HERDS.

21.—In accordance with the general principles of the scheme, compensation should be paid for reactors found in ACCREDITED HERDS, but the Ministry might reserve the right to reduce the scale of compensation where the re-infection of the herd was considered to be due to default on the part of the owner.

22.—*General.*

The Association is of opinion that the scheme outlined above can be carried out on a large or a small scale in accordance with the funds available, and the Association urges that an annual grant be made for a period of years. This appears to be necessary so that such a programme may be arranged as the annual grant will permit being carried out.

From this grant should be paid:—

(1) The cost of testing; and
(2) Compensation for reactors.

23.—In selecting herds for eradication it appears desirable that preference might be given to herds whose owners are willing, or which are within the district of a Local Authority which is willing, to bear part of the cost of the eradication in their herds or district.

24.—The Association believes that it is essential for the success of any such eradication scheme that only tuberculin of guaranteed potency be used and recommends that the tuberculin used should be supplied by the Ministry, or alternatively that a guarantee of standard potency be required by the Ministry from manufacturers.

25.—The Association recommends that to avoid abuses the possession of tuberculin by laymen should be prohibited.

26.—The acceptance as ACCREDITED HERDS of those at present licensed for the production of Certified or Grade A (Tuberculin Tested) milk, and the acceptance of the tests carried out in ACCREDITED HERDS for the purpose of the Milk (Special Designations) Orders, appears to be a matter for negotiation between the Government Departments concerned.

27.—It is important that a thorough disinfection of the buildings where reactors have been found should be carried out after their removal.

Supplement.

In the opinion of the Association the incidence of bovine tuberculosis could be materially reduced if :—

(i) More care and attention were devoted to the housing and rearing of calves in a hygienic manner.

(ii) Calves were not allowed to have access to cows suspected of suffering from tuberculosis.

(iii) The provisions of the Tuberculosis Order were amended so as to include all unthrifty animals proved to be tuberculous and which at present do not come within its scope. Power should be given to test with tuberculin any animal suspected by the Veterinary Officer.

(iv) A regular veterinary inspection of all milk-producing cows in the country were made compulsory. This would be a means of paving the way and preparing public opinion for the adoption of a tuberculosis eradication scheme.

The motion for the reception of the report was seconded by Mr. NAIRN, and the President invited discussion, having pointed out, in reply to Dr. WHITEHOUSE, that adoption of the report by the Council involved the Council's adoption of the tuberculosis eradication scheme also.

Professor S. H. GAIGER expressed doubt as to the wisdom of including in the scheme the words occurring in paragraph 3 following the word "reactors," *viz.*, "and also in Denmark and elsewhere by the method of dealing with the disease associated with the name of Bang," because it was within his recollection that Bang's own statement in regard to the method was that the measures applied in Denmark were very disappointing.

The PRESIDENT enquired if Professor Gaiger moved the deletion of those words.

Professor GAIGER replied that he thought the statement required qualification. Proceeding, the speaker suggested that paragraph 5 should be placed at the end of the report, observing that he thought it was a little unwise for them, as an Association, to give such prominence to the suggestion that they were interested in who "ran the show," as it were: *i.e.*, in the political side of eradication. It should be made clear that their interest was in eradication, and any suggestion as to who should control the scheme should come, so to speak, as an afterthought.

Further, a little verbal alteration was required in paragraph 8, in which the words "Where the number of reacting animals is sufficiently small that their immediate removal is economically practicable," should read, "Where the number of reacting animals is sufficiently small for their immediate removal to be economically practicable."

Dr. WHITEHOUSE said that he had sat on a great many committees in connection with this matter, and was present at the very inception of the Scheme by the West of Scotland Division, and he could assure them that if the Council were going to discuss verbal alterations they would sit for a week: he had been at it, and he knew. That scheme had been the result of an immense amount of work on the part of both the West of Scotland Division and the Scottish Branch, and then, again, of that Council, and he thought it would be better to take it or leave it rather than to attempt to deal with it piecemeal then.

Professor GAIGER replied that he hoped that would not prevent them from making at least grammatical corrections: If the Scheme were going forward to any official quarter, they should make it word perfect, either there or in a small committee.

Mr. MALE gladly accepted Professor Gaiger's verbal amendments to paragraph 8, while, in regard to paragraph 3, there was no real necessity to make any mention of Bang. Concerning the position of paragraph 5, he did not think it would make much difference if it were retained in its present position or transferred to the end of the report.

Proceedng, Mr. Male observed, amid applause, that the Council were very much indebted to the Scottish Branch for that Scheme. The Committee went through it, and they adopted it in its entirety, with the exception of a few alterations, which some might think an improvement on the original, or the reverse. One reason why they adopted the Scheme almost in its entirety was that they thought it was a very good Scheme (hear, hear), and another was that it had already been presented to the Ministry of Agriculture, who, he thought, had made very few criticisms. They recognised, he believed, that it was a very sound Scheme, though they raised some difficulties in regard to its adoption, one of which was finance. He desired to say, on behalf of the Committee, how indebted they were to the Scottish Branch for that Scheme. (Applause.)

The PRESIDENT asked if he was to understand that that Scheme, as the Council had it before them, was presented to the Ministry of Agriculture.

Mr. MALE replied that the Scheme, as approved by the Scottish Branch, was presented by that body to the Ministry of Agriculture and that the Committee had amended it in a few particulars to meet conditions prevailing in England and Wales.

After further discussion, Professor Gaiger's suggestions with regard to paragraphs 3 and 5 were put to the vote and lost, but the Council approved of the verbal alterations suggested in paragraph 8. The motion for the adoption of the report, subject to the amendment of paragraph 8, was proposed by Mr. GOOCH, seconded by Mr. COLEMAN, and carried unanimously.

The Council decided that the Scheme should be forwarded to the following bodies, with a view to their support being obtained: the National Farmers' Union, the British Dairy Farmers' Association, the various Breed Societies and the County Councils' Association.

ORGANISING COMMITTEE.—In the absence of the Chairman of the Committee (Captain Rider), who had to leave the meeting early, the following report was read by the Secretary :—

A meeting of the Organising Committee was held at 2, Verulam Buildings, Gray's Inn, W.C.1, on Tuesday, April 7th, 1931.

The Minutes of the previous meeting, having been published in the *Veterinary Record*, were taken as read and signed as correct.

Consideration was given to the question of the treatment of sick animals of the poor, and it was decided to communicate with the Divisions on the matter.

In regard to the resolution submitted by the Derbyshire Division, the Secretary was instructed as to the reply to be sent.

A report was made of the items of information circulated to the Press during the past quarter and also of the work done in the correction of mis-statements which had appeared in the Press.

A printed form was submitted by which the Tail Waggers' Club were appealing for funds for the provision of assistance for various institutions in different parts of the country, including a number of Dogs' Homes. At it had been ascertained that there was a member of the profession connected with each of these Homes as Hon. Veterinary Surgeon, it was felt that no further action appeared to be called for.

The Chairman of the Committee was authorised to draft a letter to *The Sphere* pointing out the fact that the P.D.S.A. farm is not a veterinary training establishment, as was mentioned in their issue of March 28th.

The Secretary, after reading the report, informed the Council that it was the desire of the Committee that a letter from the Secretary, R.C.V.S. should be laid before Council. The letter stated:—

"Complaints have been received during the past few months to the effect that members of certain divisions of the National Veterinary Medical Association are displaying on their notepaper or account forms letters indicating their membership of the Society, in addition to the letters M.R.C.V.S. I am given to understand that the practice is not uncommon, and it has been suggested to me that I should inform you officially of this complaint, in order that, if they think fit, the Council of the National Veterinary Medical Association may communicate with the divisions on the matter.

"The Council of this College has on more than one occasion expressed its strong disapproval of the use of any letters which are not evidence of some veterinary or academic qualification. To add after one's name letters which do not represent any special qualifications is held to be wrong for two reasons. (1) If it is a claim that the letters do imply some veterinary qualification it is untrue; (2) In any case it is of the nature of an advertisement.

"I should be glad if you would bring the matter before the appropriate Committee of the Association so that if they think fit they may draw the attention of the various divisions to the undesirability of this practice."

The President expressed the view, in which the Council concurred, that the report of the Committee should first be dealt with, and the letter from the Secretary and Registrar, R.C.V.S., be discussed subsequently.

Major Rabagliati moved the reception of the report, Major Over seconding.

The President having invited discussion of the report, Major H. Kirk expressed the view that delegates should now be appointed by the Council to attend Divisional meetings, if invited, for the purpose of assisting the Divisions in their consideration of schemes for the provision of veterinary treatment for the sick animals of poor persons.

The President's view that delegates should be appointed as occasion arose was accepted by the Council, and the President was deputed to make the requisite appointments.

The report was adopted, on the motion of Colonel Young, seconded by Mr. Tweed.

In regard to the letter from the Registrar of the R.C.V.S. concerning the use of letters other than those indicative of the possession of a professional qualification, it was decided that a copy of Dr. Bullock's letter be sent to the Divisions of the Association, together with a covering letter, expressing the Association's entire acquiescence with its terms.

Provisional Committee.—Professor Buxton, Chairman of the Committee, on being called on for a report of the progress made in preparation for the Congress of the Association, to be held at Norwich from August 22nd—28th, explained that the Provisional Programme had already been published in the *Veterinary Record* and that he had no additions to report. If, however, any members of the Council had any suggestions to make in regard to the programme, he would be glad to bring them to the notice of the Provisional Committee.

Resolution by Major Dunkin.

The President observed that, at the January meeting of Council, the following resolution was passed:—

"That at the April meeting the Council discuss the question of the re-organisation of the Editorial staff of the *Veterinary Record*."

The Resolution was now open for discussion.

Major G. W. Dunkin, when called upon to do so by the President, said that he had not intended opening the discussion that afternoon, mainly because everyone was aware of his views on that matter.

They would recollect that the Finance Committee approved in principle of the suggestions which he put forward many months ago, and he had yet to learn any serious objection to the principle, and he was going just briefly to reiterate what he had said before.

His main object in making that proposal was that he believed—and he thought and hoped that the majority of his colleagues on the Editorial Committee were in agreement with him—that an Editorial Committee could not adequately edit a professional journal. That was his main point.

Secondly, he considered that the *Veterinary Record*, as at present published to the profession every week, though it might meet with the approval of the majority of the members of the Association, yet fell far short of what a real professional journal should be. He held the view that were there more sources of information that should be put before the profession; he considered that they were not getting that done, and that steps should be taken whereby that information, either by annotation or suitable abstract, should be made available for the busy practitioner, who had no time for reading other than the journal that the Association sent him. If they were going to do that—and every member of the Editorial Committee was in agreement that that ought to be done—then they could not do it with their present editorial staff. They would remember that they had a joint committee, composed of the Finance and Editorial Committees, appointed to go into the allied question of the office staff eighteen months ago, and the information was elicited that the staff had plenty to do. They had to believe that, because the Council had just agreed to the appointment of another official.

Every effort had been made by the Editorial Committee to obtain suitable abstracts from foreign journals, with a view to giving the general practitioner an opportunity of knowing what was taking place in other countries, but it must be agreed that it had not been successful.

On thinking over the question, as he had been doing for a long time, he had come to the conclusion that there could only be one serious objection from his point

of view, or from that of any other member of Council, and that would be the question of finance. It had been said that the Association could not afford it. He suggested that that was not a fair statement of fact, because no one was in a position to say what the adoption of his proposition would cost; therefore no one could say that the Association could not afford it.

It was within the memory of everyone on that Council that the Editorial Committee decided, with the consent of the Council, to change the printers and publishers of the *Veterinary Record,* and that had proved itself to be a wise move.

The difference in the cost of publication as between 1929 and 1930 was a saving of £400, all but ten shillings. The whole of the year 1929 the *Veterinary Record* was published by the publishers who had had the work in hand for many years, and in 1930 it was undertaken by the new publishers. He thought, moreover, that it was fair to say that there was very little difference in the total pagination as between 1929 and 1930. He had worked out the average pagination of such numbers as he could find. The results were as follows:—In 1929 he was only able to find 33 issues, and the average number of pages of subject matter in these issues was 21, and the average number of pages of advertisement matter 13. In 1930 he found 45 issues, with an average of 23 pages of subject matter and 13 pages of advertisements. In 1930, as he had just said, they saved £400, but that year included the issue of the largest individual number of the *Veterinary Record* that had ever been published—the International Congress Number—and the cost of it was £121 6s.: considerably more than double what it usually cost them to issue the *Veterinary Record,* and yet, in spite of that, they had saved £400.

That was an example of the fact that they were saving money, at all events and that the Association was a good deal better off than when he originally raised the question—and he considered that they were sufficiently well off to adopt the proposition then.

What he would like to say was this: their only source of revenue was advertisements and they could not increase their advertisements unless an effort were made to get amongst potential advertisers. He believed that if more time were spent amongst potential advertisers they could very considerably increase their advertisement revenue. Moreover, if they included material in their journal which would encourage other people to take it they would increase the circulation and then, and only then, would they get new advertisers to come in.

What he had in mind was the appointment of a person—he did not know what they might decide to call him, but he would like him to be called the editor—whom he would wish to see displace the present Editorial Committee and placed in entire charge of the editorial department of the *Veterinary Record.* It would be an extra appointment, an addition to the existing staff, and if that were done the Editorial Representative would, of course, continue in his present capacity.

He did not suggest that this new gentleman should have autocratic powers. He should like to see, in addition to that appointment, the annual election of three Members of Council, to act as a permanent Advisory Committee to the Editor on matters of general professional importance and other matters about which the appointed editor might require guidance. He should like to see these gentlemen elected every year, so that the editor would always have at his beck and call three men of eminence to whom matters of importance could be referred when necessary.

That, he thought, was all he had to say: it was a brief outline of what he had in mind.

Professor Wooldridge enquired if he might ask, for information, what was the type of individual Major Dunkin had in mind: whether his main qualification would be a literary one, a veterinary one, or one as an advertising agent?

Major Dunkin replied that the type of person he had in mind was a man of some considerable education, if possible, with a university degree in arts, and a man of some journalistic experience—definitely, an editor. He was sure they could get such a man at a commencing salary of £500 per annum.

Professor Gaiger asked if Major Dunkin could tell them what was the editorial organisation of the *British Medical Journal.*

Major Dunkin replied that the Editor of the *Lancet* was a medical man, it was true, but he was not acquainted in any way with the editorial organisation of the *British Medical Journal.*

Mr. J. C. Coleman said that he regretted to have to stand up and absolutely oppose Major Dunkin on that subject. He had repeatedly congratulated the Editorial Committee upon the work they had done and the manner in which they had steadily improved the Association's journal. (Hear, hear.)

Major Dunkin had now said that the abstracts that he and the other members of the Committee had arranged to secure for the *Record* had been unsatisfactory: might he say that, as a general practitioner, he had been intensely satisfied with the re-organised abstract service. Moreover, he thought that the value and tone of the whole journal had greatly improved, and he thought it would be an extremely retrograde step if they attempted to tamper with the smooth-running and most efficient machine which they had at the present moment for the production of the *Veterinary Record.* (Applause.) They had a most efficient and hard-working Committee, conversant with both the practice and science of their profession, and, so far as making a business of it was concerned, so long as the *Veterinary Record* was paying its way, that was all the profession required. Of course, they desired to encourage advertisers, but if these did not see fit to advertise, he did not think that they should trouble about them overmuch.

Major Dunkin had suggested an editor with an arts degree: he (Mr. Coleman) thought that if they had anyone but a veterinary surgeon as editor of a veterinary paper that, too, would be a step of a very retrograde character: he knew of no professional paper that had not a member of the profession as its editor.

He thought they would have some difficulty in finding three men adequately to take the place of the fifteen who had done and were doing their work so successfully, and he would like to compliment the Editorial Committee most sincerely on its work. He recognised the extraordinary sacrifices they had made—sacrifices of time and energy on

the association's behalf, and he did feel that their thanks to them for what they had done could not be too great. (Applause.)

He should be very sorry to see any alteration in the conduct of the *Veterinary Record* and he sincerely hoped that everyone else would look upon the matter in the same light that he did.

Sir John Moore, when requested by the President to express his views, said that he was afraid he must maintain an open mind on the matter: he had not thought about it sufficiently to express any definite opinion. So far as he was concerned as the present Chairman of the Editorial Committee, he was quite willing to continue to perform any little service he could in the interests of the Association and those of its official organ.

Professor J. B. Buxton observed that he, too, could not express any definite opinion. He had had some little experience, in days gone by, of editorial work, and he could not help feeling that a person with a sound knowledge of editorial work would be an asset to any committee of professional men. He should be the last to belittle the immense amount of work which had been done by those who had served and were serving on the Editorial Committee, but he thought that those of them who had served on the Committee had realised on many occasions that they did possess many limitations. He was afraid that he had not given the matter much thought: things seemed to have jogged along comfortably; nevertheless, he thought it would be unfortunate if they adopted Mr. Coleman's attitude and shut their minds to any consideration of the question. He did not think it was necessary for them to assume that they were going to ignore the professional aspect of the Association's publication—that would be a mistake—but they should keep an open mind and give the matter serious consideration.

Professor Wooldridge described the question as a very big one, and one which could not be disposed of lightly. He was fully in agreement with the whole of the preamble of Major Dunkin's statement, but he was not at all satisfied that matters could be improved quite in the way suggested by Major Dunkin. It seemed to him that there would be very great difficulties indeed if any individual were appointed as editor who had no knowledge of the technical side of veterinary matters and, however good he might be in literary matters, his efforts would lose in value enormously when it came to applying them to technical affairs. This man was to have at his command a small committee of three members, and it might be said that he could refer these various things to them, but let them look at the task they were going to put on those three members. At the present time they had a larger committee which was of the proportions it was in order to relieve them of regular attendance. If they were going to condense them to three members, in order that their efforts might be licked into shape by the newly-appointed editor, that, in fact, he should do work that was being done at the present time by the Editorial Representative, Mr. Brown—he thought very successfully—(Hear, hear)—he did not see that there would be any improvement. He thought the principle of having a University Graduate as editor was sound, but unless he could combine technical knowledge too, he thought the advantage would be more than counteracted by the disadvantages. His feeling at the present time would rather be against Major Dunkin's proposal than for it.

Lt.-Colonel Young observed that he had had conversation with many members of the Association in connection with this matter, and he thought there was a general feeling that Major Dunkin's proposition was a sound one, but that the time had not yet arrived at which they could adopt it, from a financial point of view. It was true that the Association's finances were better than they had been, but he felt that the money could be used in a better direction than in the manner suggested by Major Dunkin.

He had discussed the matter with the Association's Hon. Treasurer, and the latter was very anxious about the financial side of the proposal and hoped that no rush decision would be arrived at and none without the matter being very carefully considered from his point of view. His own feeling was that they should leave the matter over, maintaining meanwhile an open mind upon the subject. The time had not yet arrived for them to come to any definite decision.

A Member observed that Major Dunkin, in speaking of the appointment of a suitable editor, had said that the profession was not receiving, through the organ of the "National," what it was entitled to receive. He would like him to elaborate that point in a few words and say whether it was in the direction of foreign transactions, or did he refer to some general consideration?

Major Dunkin, in reply to points raised in discussion, said that, in regard to Mr. Coleman's observations, he took great exception to his remark that the *Veterinary Record* was not a business concern: it was. He would like Mr. Coleman to look at their finances and see what the finances of the Association would be like if it were not for the *Veterinary Record*. Would Mr. Coleman allow him to assure him that the conduct of the *Veterinary* Record was firstly a business concern and secondly a professional concern.

He was sorry to hear that Mr. Coleman was satisfied with the contents of the *Veterinary Record*: sorry, because there were other subjects of veterinary literature that he might appreciate, but did not, because they were not represented, or only inadequately represented, in the *Veterinary Record*.

Undoubtedly a great deal of the material which appeared in the *Veterinary Record* was good, but that was no reason why they should not make every effort to make the journal better.

He was afraid that Professor Wooldridge had misunderstood him. It was not his intention that the permanent committee of three should attend regularly at Verulam Buildings, but rather that they should be communicated with by the editor in the event of there being sent in for publication matters of professional importance, the desirability of the publication of which might be in doubt. But as to actual professional points, professional terms, descriptions, etc., Mr. Brown, who was a member of the profession, would be there to help him.

Colonel Young had assured them that the time was not yet ripe, but he did not say why. The motion was proposed at the last Council Meeting and Members of Council were not yet prepared to discuss it—some had said that day that they were not prepared to say anything about it. If the motion was to be considered at all, he would

beg that something be done: if it were a matter worthy of consideration, let them consider it at once, if desired, by a small committee, to be appointed, if necessary, at that meeting.

With regard to the financial side of the question, he had in mind—as had many others there present who were fortunate enough to be attached to institutes which had libraries—what a vast amount of material there was which should be made available for the practitioners of this country. There was one country at least which made an effort to put such information before its readers, and that was France, and in one French journal, the *Révue Générale* there were 30-40 pages per issue of abstracts from foreign journals.

Professor Wooldridge enquired if the editor of that journal was a veterinary surgeon.

Major Dunkin replied that he did not know, but Colonel Young supplied the information that the editor was a member of the veterinary profession.

Professor Gaiger enquired as to how far an increase of *Veterinary Record* abstracts would be duplicating, say, the new *Veterinary Bulletin* that was just coming out. The question was whether or not the *Veterinary Record* was to become mainly a journal for the publication of abstracts.

Major Dunkin, replying, asked what proportion of practitioners would take in the *Veterinary Bulletin?*

A motion by Mr. Tweed "That an editor be appointed" was not seconded.

Mr. W. Nairn moved "That a Special Committee be constituted, with the following terms of reference: To explore the whole question of the re-organisation of the editorial equipment of the *Veterinary Record*, for the purpose of considering whether it can be improved by the addition of staff and, if so, what addition should be made."

Major Dunkin seconded the motion, which was carried unanimously.

The special committee was then appointed, as follows: Professor Buxton, Mr. Coleman, Major Dunkin, Professor Gaiger, Major Kirk, Sir John Moore, Mr. Nairn, Major Over, Captain Pillers, Captain Townson, Professor Wooldridge and Colonel Young.

Resolution from Division.

From the Royal Counties Division.—"That this meeting views with great apprehension the appointment of Veterinary Advisory Officers and is of the opinion that if these posts are multiplied and the duties at present carried out are not greatly restricted, a great deal of harm will accrue to the veterinary profession and the agricultural industry.

This Division supports the steps that have been taken by the National Veterinary Medical Association."

The Secretary was instructed to convey to the Division the Council's warmest thanks for the support given by the resolution to the steps already taken by the N.V.M.A.

Next Meeting.—It was agreed that the next meeting of Council should be held in Birmingham, on a date to be fixed by the President.

The Council resolved itself into committee to consider a matter raised by Mr. W. Tweed, and upon the resumption of open meeting, there being no other business, the proceedings were terminated by the passing of a hearty vote of thanks to the President for his conduct in the chair.

Clinical and Case Reports.

Sheep Poisoned as the Result of Eating Larkspur (*Delphinium consolidum*).

By E. E. Elphick, M.R.C.V.S., D.V.H., Hastings, N.Z.

On January 15th, 1931, in company with Mr. Brodie, M.R.C.V.S., Hastings, I visited a paddock at the rear of the Hastings Memorial Hospital. In it we found 15 dead sheep and two sheep still alive and which ultimately recovered. The owner's first intimation from the Maori drover in charge was that all his sheep, about 400 in number, were either dead or dying.

The previous history was as follows:—The sheep had been in a very bare holding paddock adjoining the sale-yards from the evening of the 12th, and had been put up for sale on the 14th. After purchase they were removed in the late evening of the 14th to the paddock in which they died. They had unstinted water, but had had no feed for 48 hours.

A preliminary examination of the dead sheep gave one the impression that they had died from strychnine poisoning, the head being drawn back and the limbs extended. A good deal of blood-stained froth was present about the nostrils in all cases. The ground round about showed evidence of struggling. The two live sheep, on being raised to their feet, were practically paralysed, but both developed chronic muscular spasms within a minute or two of being lifted. The general symptoms were those of aconite poisoning.

A search of the paddock was then made for poisonous plants, and at the back gate of the hospital was found a heap of garden refuse. This, on examination, was found to consist entirely of withered larkspur plants, many of them in the seeded stage and some still bearing the withered flowers. The roots were untouched, but the stems were well eaten and the leaves also.

Three of the sheep were then opened. The rumen was packed in each case with the plant material. The other stomachs and the bowels were practically empty.

Marsh (U.S. Bulletin, Department of Agriculture, 1245) writes, in relation to larkspur poisoning:—

"Sheep eat the larkspurs freely without suffering any evil consequences. There is a rather general belief in many regions of the West that losses of sheep have been caused by larkspur feeding, but many experiments in a large number of species and in different regions have proved conclusively that sheep can be grazed on larkspur without any risk whatever; in fact, it may almost be said that larkspur furnishes good forage for sheep."

Lander says that S. B. Nelson fed as much as 24¾ pounds of fresh leaves to a sheep within five days without ill-effect, but, on the other hand, G. V. Wilcox, of Montana, killed a yearling lamb in two hours by the extract from less than an ounce of the dried leaves. (Vet. Toxicology, second edition, page 184.)

Under ordinary circumstances and had other feed been available and the sheep fed prior to being exposed to the

temptation, there would probably have been no mortality. The hungry and empty state of the sheep was doubtless the biggest factor here. The plants were also in the seeded stage, when they are said to be specially poisonous. The fact that they were dry may have also increased their toxicity.

Hæmorrhagic Septicæmia, or ?

By R. Swaby, M.R.C.V.S., Gainsborough; and K. J. S. Dowland, M.R.C.V.S., Lincoln.

On comparing notes at the last meeting of the Lincolnshire Division, N.V.M.A., we discovered that we had both encountered cases of a disease of bovines that seemed to us remarkable in many respects. It was first decided to prepare a joint description of these from the standpoint of the clinician.

Then, on reflection, it was deemed that separate descriptions by two observers, straight from the case book, would be more valuable than a joint report.

We desire to emphasise the following features:—

(1) The sudden onset, and rapidity of the cause of the disease.

(2) The constancy of lesions, etc., in all cases.

(3) The factors common to all cases—life in a foldyard and a diet in which barley or barley straw figured. No further cases occurred after the feeding of this material was stopped.

(4) Absence of evidence of contagion.

(5) Negative nature of bacteriological findings.

. . . . .

Clinical Report by R. Swaby.

On Monday, February 9th, I was called out to see 70 fattening bullocks, running in three foldyards on the one farm, five of which had died more or less suddenly since the previous Saturday. On my arrival I found that five more had been slaughtered that morning and on going through the yards again another was noticed obviously ill.

These cattle were in prime condition, were home-bred Lincoln red cattle, aged from 2 to 2½ years, and were all receiving the following ration: Egyptian cotton cake, pulped potatoes, barley meal, wheat meal, and sugar beet pulp. The barley was imported Russian barley.

Symptoms.—The affected animals were all taken suddenly ill, exhibiting the following symptoms: Blowing respirations, grunting, dejected appearance, visible mucous membranes injected and slightly cyanosed, straw-coloured fluid exuding from both nostrils, ears drooping, general appearance of acute toxæmia, temperature 104°-106° F., pulse rapid and running down. Auscultation of the chest revealed well-defined râles. The animal would drop in its tracks without any struggling. The course of illness was from two to eight hours' duration.

Post-mortem.—I saw six of these cattle opened fresh and the lesions in each were constant, *viz.*, strikingly acute venous congestion of lungs, cloudy swelling of the liver, congestion of the gall bladder, œdema of the heart muscle and lymphatic glands (all the latter being hæmorrhagic), congestion of the parietal pleura, with a little serous fluid in the chest cavity. The kidneys and spleen appeared normal, as did the rest of the abdominal viscera.

Specimens of lung, liver, kidney, spleen and lymphatic glands, sent for examination, were reported upon as follows:—The lesion in the lung was acute venous congestion of the intralobular veins, cloudy swelling of the liver, œdema of lymph glands. No abnormality was noted in the kidney or spleen. Microscopic examination failed to reveal any acute infection as the cause of death. Chemical analysis also proved negative for poisons.

The striking features of these cases are:—

(1) Sudden onset and rapidity of dissolution and death of the animals.

(2) Constancy of lesions in all cases, pointing to some common factor operating in each—15 bullocks died in all. (There have been no further cases since the barley was discontinued).

(3) The questions they raise, as to whether the cause was dietetic or a specific infection, and as to what was the true nature of the condition.

. . . . .

Clinical Report by K. J. S. Dowland, Lincoln.

On Saturday, February 21st, I was called to a bullock reported to be "kicking about."

On arrival I found an 18-months-old bullock standing in a foldyard with five others. It was "blowing" hard, evidently standing with difficulty and apparently only semi-conscious. From the nostrils streamed a little serum-coloured exudate, bubbly and highly ærated. Attempts to move the animal caused it to fall to the ground, where violent galloping movements were made, with much rolling of the eye. After a little while the animal regained its feet.

It was stated that the animal had been first noticed unwell two-and-a-half hours previously. I found the temperature (rectal) to be 106·6° F. Death took place shortly after my visit.

Owing to the intervention of the Saturday half-holiday and Sunday, a *post-mortem* was not held until Monday. Examination of the blood in the meantime proved negative.

Post-mortem.—The *post-mortem* appearances were as follows:—Violent congestion of the lungs, the bronchi containing a fair quantity of straw-coloured exudate. Mediastinal glands very congested and œdematous. Pleural and pericardial cavities contained a little blood-stained exudate. The heart was full of blood, but the endocardium appeared normal. There was some œdema around the kidneys, which were also themselves œdematous and showed petechiæ. Some petechiæ in the bladder. Otherwise, the abdominal viscera appeared perfectly normal, as did also the musculature, subcutaneous tissue, etc.

Perhaps worthy of note was the contrast between the intestines, etc., which were fresh, and the lungs and kidneys, which were putrid.

Since the occurrence of this case careful observation has been kept on the remaining five companions of the bullock. Not one of them has ailed in the slightest degree.

Some similar cases were observed about Christmas time.

There was also to be noted, an extremely rapid onset of disease, the fact that the lesions were confined to the lungs and, apparently, a complete absence of evidence of infection.

The only conditions common to both outbreaks were:—

(1) The affected animals were kept in foldyards.

(2) The animals had been eating badly kept and more or less mouldy barley straw, of the 1930 crop, which, on the whole, is very bad in these parts.

N.V.M.A. Divisional Report.

Central Division.

Testicular Grafting discussed at Red Lion Square.

There is a refreshing element and an enhancement of value in research that is carried out by a practitioner in the course of his daily work, particularly so when the nature of that research demands field observation and experimentation upon every available type of domesticated animal. The experiences and results of Mr. G. P. Male's work in connection with the gland grafting of animals, which has been of a pioneer character and which has hitherto failed to receive the recognition which its scientific and economic importance demands, were recounted by him in a paper entitled "Gland Grafting and its Economic Value," presented to the Central Division, N.V.M.A., at a meeting held at 10, Red Lion Square, W.C.1, on the evening of Thursday, April 2nd, 1931. The fact that this was Maunday Thursday, and that many Fellows were therefore travelling to their selected Easter Holiday centres, unfortunately restricted the attendance upon an occasion which would normally have suggested a "record" meeting and discussion, but even as things were, the small band of Fellows present found in the paper more than sufficient material for comment and argument to fill the evening with both instruction and enjoyment.

The President (Captain G. Dunlop Martin) occupied the chair and there were also present:—Lieut.-Colonel E. P. Argyle, Mr. W. Brown, Captain R. Bryden, Mr. H. E. Bywater, Mr. A. Cornish-Bowden, Captain W. T. Ferguson, Mr. H. D. Jones, Mr. Herbert King, Major Glyn Lloyd, Mr. G. P. Male, Dr. J. McCunn, Mr. J. W. McIntosh, Major-General Sir John Moore, Mr. W. Perryman, Lieut.-Colonel G. Rees-Mogg, Captain E. B. Reynolds, Dr. A. L. Sheather, Miss K. W. Shedlock, Major R. H. Stalker, Mr. E. L. Stroud, Captain S. Villar, Mr. J. Willett, Mr. R. A. Willett, Professor G. H. Wooldridge and Captain J. F. Macdonald (Hon. Secretary).

Visitors.—Messrs. F. T. Day, A. E. Carey Foster, J. H. K. Hobday, and Major W. B. Howe.

The minutes of the March meeting of the Society, which had been published in the *Veterinary Record*, were taken as read and were confirmed and signed.

Correspondence.—Apologies for absence from Major H. Kirk, Major R. E. Montgomery (who informed the Secretary that he could not attend the meetings for several months, as he was touring abroad), Mr. W. W. Reekie, Mr. H. L. Roberts and Captain R. J. Stow.

Morbid Specimens and Cases of Interest.

Dr. A. L. Sheather exhibited melanotic and other growths from a dog, the specimens having been brought into his laboratory only two hours previously. The veterinary surgeon who brought them was asked to destroy the animal, an Irish terrier, because it had an ulcerating melanotic growth involving the orifice of the prepuce, and the dog had been in pain owing to retention of urine. He (Dr. Sheather) was asked to make a *post-mortem* to determine the nature of the growth, and he had brought with him the penis, with the skin of the prepuce on it still, while there was another piece of skin in which there was a small tumour. The mass (also exhibited) represented the inguinal glands, still joined together and apparently infiltrated with a melanotic growth, while he had also to show them the lungs, with 15-20 melanotic tumours in each lung.

What struck one as peculiar was that the dog had several tumours, subcutaneously scattered all over the body. The one in the tray was in the region of the hock, but that and the other subcutaneous growths were not melanotic, whereas the growth on the prepuce and that in the inguinal gland were melanotic. There were pigmented and partially pigmented tumours in the lungs. The skin covering the subcutaneous tumours was melanotic in each case, but the subcutaneous tumours themselves were not.

The dog was about 11 years old. None of the abdominal organs was abnormal, except the bladder, which was enormously distended and held 12 ounces of urine.

The President said that he would like to ask if any Fellow had had a similar experience to that which had befallen him during the past fortnight. The subject of the case was a very well bred hunter, 14 years old, at which he had been asked to look at because it was lame in front with low ringbone. The horse had been fired the year before by a very eminent veterinary surgeon but had done no work for this last season. On pulling the horse out to see his action, both the owner and he—not to speak of the very capable groom—were profoundly astonished to find the horse going very lame on the off hind with typical spavin lameness—and showing a bony enlargement at the seat of spavin which had never been seen before and which could be seen, *i.e.*, did not require to be *felt*. In passing, it should be said that the subject was a beautifully proportionate horse of 16 h.h., almost if not quite good enough to be given as an illustration of a well proportioned horse—the other hock, too, was absolutely clean. There was no mark whatever suggestive of external violence. There seemed to be no ostensible cause for this, though the off-hind presented a large spavin. The owner was nonplussed at the degree of lameness shown when the animal was pulled out for examination.

Discussion.

Professor G. H. Wooldridge observed that, with regard to Dr. Sheather's specimens, while the condition illustrated was very interesting, it was not uncommon (as Dr. Sheather would agree) to get multiple melanotic tumours on the dog's legs; but it was certainly unusual to get the primary one round the entrance to the prepuce. Melanotic growths in the skin of the dog were very common indeed when they attained the age of six or seven years, and he found them very much more commonly in dogs that had a brown skin, such as Irish terriers, Airedales and pugs—not so often in white-skinned dogs such as the fox-terrier. He should say that Dr. Sheather's surmise that they were melanotic sarcomata was a most likely one, judging by the distribution of the lesions, metastasis having taken place by the blood stream. It seemed to him that most of those melanotic pedunculated growths started with the deposition of pigment underneath the skin, and that the pigmentation was reduced in intensity in the deeper areas of the growths.

Dr. Sheather observed that he was inclined to think that the tumours were subcutaneous and that the skin was not

involved. Had they been in the skin he should have expected to find them fibrous and not sarcomatous.

Professor Wooldridge asked, with reference to the President's case in the hunter, if it was not likely that this animal had simply slipped up in the stable and caused some injury to the existing spavin. It was no uncommon thing to get horses with a fairly big spavin going quite free from lameness and then, from a slip either at work or even in the stable, becoming acutely lame for some time afterwards.

The President commented that the owner was a Royal Horse Artillery Officer and an exceptionally good and keen horsemaster, while he possessed an excellent groom, and both looked after their horses too carefully to have missed any such happening as the slip mentioned by Professor Wooldridge. Moreover, the horse had *never* been lame behind.

Professor Wooldridge observed that he had not gathered, from the President's opening statement, that the enlargement in the seat of spavin had not been seen before and he believed had not been in existence. In the light of that information, he desired to modify what he had said. He should say that, in all probability, that enlargement was not true spavin, because a true spavin could not have attained that dimension in so short a time.

The President replied that the enlargement was on the site of true spavin, and the horse's action corresponded.

Mr. J. Willett had no doubt that the horse had a spavin which had been in existence for some long time, and he should say that the horse, in rolling and slipping in getting up, might bring on that lameness. A spavin that might have escaped the eye of the master or groom might yet, to the eye of the professional man, have been in existence for some time.

Dr. Sheather requested permission to relate an unusual case which came under his notice only the previous day. The subject was a dead lamb that was sent up to him in a box. Upon examining the carcass he saw that the lamb had recently been docked, but the wound was healing up properly; it also looked to him as if the lamb had been castrated by the use of some crushing instrument, which had been applied outside the scrotum, and in the scrotum—and not only in the scrotum but distributed in various parts of the body—was a quantity of gelatinous exudate. On further *post-mortem* he found a lot of red, serous fluid in the abdomen; the lungs were covered with a thin film of exudate, which could be wiped off, leaving the pleura bright and glistening; it was not therefore an inflammatory pleural exudate, and in all these exudates he could find a bacillus of the gas gangrene type. The most obvious lesion, however, was actually in the muscle tissue of the heart, which was permeated with gas bubbles and was very spongy. It was rather unusual to find a lesion in the heart muscle instead of in one of the skeletal muscles.

New Fellows.—Major W. B. Howe, R.A.V.C., was nominated as a Fellow by Major-General Sir John Moore, seconded by Major J. M. Soutar, while the election as Fellows of the Society was unanimously made of the following gentlemen: Mr. C. A. P. Buckner (Brixton Hill), proposed by Captain L. S. Balls, seconded by the Hon. Secretary; Major R. H. Stalker, R.A.V.C., proposed by Captain R. J. Stow, seconded by Major Glyn Lloyd, and Mr. G. A. Tomlin (Hasketon, near Woodbridge), proposed by Dr. J. McCunn, seconded by Professor J. G. Wright.

Paper.—The President now called upon Mr. G. P. Male to read his paper entitled "Gland Grafting and its Economic Value," observing that he was sure it would prove of absorbing interest to them all. (Hear, hear).

[Mr. Male's paper, and a full report of the discussion which followed its delivery, are reproduced at the commencement of this issue of the *Record*.—Ed.]

Votes of Thanks.—At the conclusion of the essayist's reply, the President said that he would like, from the Chair, to move that their very best thanks be accorded Mr. Male for taking the trouble which he had done to compile the paper and for so kindly coming there and reading it to them that evening. (Applause).

Speaking personally, it was a paper which had given him furiously to think: he thought it must stimulate them all to take a deep interest in the matters raised by Mr. Male, and he thought it could only be productive of good all round. For the practising veterinary surgeon it certainly opened up many new fields of enquiry, and he thought that papers like that were most useful to them. Both personally, and for all the Fellows present, he desired to express hearty thanks to Mr. Male for being so good as to give that paper at a Central Veterinary Society meeting. (Applause.)

The vote of thanks was seconded by Major-General Sir John Moore, who described the paper to which they had listened as a most interesting one, while the discussion had been of a practical nature. He himself had had no experience of the work which had been described and discussed there that evening, and he really did not know what to think of it, but the suggestion had passed through his mind that this question, which was of great interest to the medical profession also, might form a very fitting subject for combined discussion by the Comparative Medicine and other Sections of the Royal Society of Medicine. Two years ago Lord Dawson of Penn suggested the subject of sterility for combined discussion and had approached him with that object, but the project did not then materialise. In view of the new light now thrown upon the subject, he thought they should seek to induce Mr. Male to initiate a discussion upon the subject at the Royal Society of Medicine: he felt that very great good might accrue from it, and the subject might be thoroughly discussed with the other appropriate sections of the Royal Society of Medicine. (Hear, hear.)

Captain E. Brayley Reynolds, who had opened the discussion on the paper, warmly associated himself with the vote of thanks.

Mr. Male, acknowledging the compliment of the enthusiastically-accorded vote of thanks, expressed his warm appreciation of the manner in which his paper had been received. In regard to Sir John Moore's suggestion, he did once promise a paper on that subject to the Royal Society of Medicine, and before he promised one to the Central Veterinary Society, but the former had forgotten about it, whereas their Secretary had not, with the consequence that he was "giving it here instead of there." (Laughter and applause.) Perhaps in the more or less distant future he might think about adopting Sir John's suggestion. (Hear, hear.)

He was very glad to hear that Captain Brayley Reynolds was not so opposed to gland grafting as he appeared to be when he first got up: he was very delighted to see him at the meeting, and he must thank him very much for so kindly opening the discussion. (Applause.)

The meeting terminated with the passing of a vote of thanks to the President for his conduct in the chair.

J. F. Macdonald, *Hon. Secretary.*

Royal Sanitary Institute Congress.

The Forty-second Congress of the Royal Sanitary Institute will take place at Glasgow from July 4th to 11th next, under the Presidentship of Sir Henry Mechan, D.L., LL.D.

The annual congresses organised by the Institute are recognised as the most important gatherings in the cause of public health, and the large field covered by the work of the Congress is indicated by the immense range of subjects which are to be discussed.

As in recent years, a special section (Section F) will be devoted to Veterinary Hygiene, the particular subjects to be discussed this year (according to the preliminary programme just issued) being (1) control and disposal of unsound foods; (2) bacterial contamination of milk and its significance.

The officers of the section are as follows:—

President.—Arthur Gofton, F.R.C.V.S., Chief Veterinary Inspector, Edinburgh.

Recording Secretary.—Major J. A. Dixon, T.D., M.R.C.V.S., Chief Veterinary Officer, Leeds.

Local Secretaries.—S. G. Abbot, M.R.C.V.S., D.V.S.M., Veterinary Inspector, Renfrew County Council; and Duncan McLeod, M.R.C.V.S., Assistant Veterinary Inspector, Glasgow.

The Royal Veterinary College.

Recently the London Society, whose aim is to stimulate a wider concern for the preservation of things which are of value to London as the chief City of the Empire, visited the Royal Veterinary College, and in its *Monthly Journal* has published the following:—

"Many of our members probably know that the future existence of this famous centre of research into the cause and cure of animal diseases has been threatened for some time through lack of funds to pay for the necessary rebuilding and matters have been brought to a head by the fact that a large sum must be raised by July if the work is to continue unimpaired.

"A compulsory closing would also mean the extinction of the Veterinary Infirmary, which, in July, August and September last, examined 1,555 animals and admitted 345, diagnosing 52 different ailments; the Clinical Department, through which 2,478 animals passed and 550 operations were performed; the Forge, in which were put on 510 new shoes; the Chemical Department in which 65 analyses were made and 86 cases X-rayed; and the Research Institute.

"If, however, improvements were carried out, we could have a College worthy of England and an asset to the Empire, and the time would also be ripe to apply for university status.

"What is much more important and matters a great deal more to the country is that the College has played a leading part in State Medicine—such things as the eradication from Great Britain of glanders in horses, and rabies in dogs, each of which is contagious and fatal to man; pleuro-pneumonia, and the dreaded foot-and-mouth disease, the ravages of each of which have cost agriculture millions of pounds. In regard to the last-named disease, which has rightly been termed 'a product of his Satanic majesty,' England is envied by every other country in the world, for last year we had only eight outbreaks."

In Parliament.

The following questions and answers have been recorded in the House of Commons recently:—

The Intradermal Tuberculin Test.

Brigadier-General Brown asked the Minister of Health whether his attention had been drawn to the uncertainties of the intradermal test on cattle for tuberculosis; and if, in view of its unreliability, he will take steps to standardise the tuberculin on the market so that all tests can be carried out with the same serum?

The Parliamentary Secretary to the Ministry of Health (Miss Lawrence): My right hon. Friend is advised that the intradermal test is the best form of the tuberculin test under ordinary farm conditions, but that the results obtained cannot be relied on unless tuberculin of sufficient potency is used. My right hon. Friend is considering the question of the standardisation of tuberculin in consultation with my right hon. Friend the Minister of Agriculture and Fisheries.

Mr. Smithers: Will the hon. Lady say who are the advisers to the Ministry of Health and whether representatives of veterinary surgeons have been consulted?

Miss Lawrence: I think I can say that we are in command of the best advice.

Sir Arthur Steel-Maitland: May I ask who, in the opinion of the Ministry of Health, is competent to give the best medical advice?

Miss Lawrence: I think it would be invidious to pick out for special mention the name of any person.

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Veterinary Research Institute, Camden Town.

Mr. Lees asked the Minister of Agriculture whether his attention has been called to the financial situation of the Veterinary Research Institute of Camden Town; and whether he will be prepared to recommend to the Chancellor of the Exchequer that a special grant be given to keep the institute in reasonable efficiency?

Dr. Addison: Yes, Sir; I am well aware of the financial position of the Animal Pathology Research Institute attached to the Royal Veterinary College at Camden Town. A scheme for the development of research in animal diseases upon a considerable scale is in an advanced stage of preparation and will, I trust, be sanctioned and brought into operation at no distant date.

Mr. Lees: Will the right hon. Gentleman use his influence to get a grant from the Treasury for this institute, in place of spending national money on opera?

Dr. Addison: We will consider every case on its merits.

Lieut.-Colonel Fremantle: When the scheme is brought before the House will an opportunity be given for a discussion on it?

Dr. Addison: I would like notice of that question.

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Milk (Imports).

Miss Picton-Turbervill asked the Minister of Agriculture whether he can inform the House how much per cent. of the milk consumed in Great Britain is imported, showing condensed milk and imported dried milk separately?

Mr. Paling (Lord of the Treasury): I have been asked to reply. On the basis of estimates for the years 1924 to 1927, contained in "The Agricultural Output and the Food Supplies of Great Britain," 1929, which are the latest complete figures available, it is calculated that after converting preserved milk into its estimated equivalent in liquid milk, approximately 8 per cent. of the milk consumed in Great Britain is imported, of which condensed milk accounts for rather over 7 per cent. and milk powder for rather under 1 per cent.

Mr. Charles Williams: Is the amount increasing?

Mr. Paling: I could not say without notice.

Milk Preparations (Imports).

Mr. O. Lewis asked the Minister of Health whether his attention has been called to the fact that the importation or sale of milk preparations not containing prescribed minima of milk fats is prohibited in 24 countries in the British Empire and in 20 foreign countries; and whether he will consider the desirability of promoting similar legislation in the interests of public health in this country?

Mr. Greenwood: I am aware of the fact stated, but I do not think it is necessary in the interests of the public health to introduce legislation for this country similar to that referred to.

Mr. Lewis: Why should we be satisfied with a lower standard in this country?

Mr. Greenwood: I am not satisfied that there is a lower standard.

Sir A. Steel-Maitland: If a minimum of butter fat is prescribed for fresh milk, should there not be a minimum for preserved milk?

Mr. Greenwood: The point of the question related to public health, and I understand that there is no reason, on that account, for altering the law.

Milk (Sale).

Mr. Butler asked the Minister of Health whether he proposes to take action to implement the findings of the Standing Committee on the Laws relating to the Sale of Milk, published in May of last year?

Mr. Greenwood: I assume that the hon. Member is referring to a report made by the Standing Committee of the Council of Agriculture for England. I have this matter at present under consideration in consultation with my right hon. Friend the Minister of Agriculture and Fisheries.

Vivisection (Downe House, Kent).

Mr. Freeman asked the Secretary of State for the Home Department how many licences have been granted for experiments at Downe House, Downe, Kent, or any laboratories attached to it; and how many experiments on living animals have already been performed there?

The Under-Secretary of State for the Home Department (Mr. Short): As Downe House is not registered no licence has been granted for experiments at this place nor have any experiments under the Act been performed there.

Mr. Freeman: Is it intended to use these buildings for the purposes of experiments on animals?

Mr. Short: I could not say.

Cattle Markets.

Mr. Blindell asked the Minister of Agriculture whether he has considered the communications sent to him from local authorities desirous of establishing new cattle markets, involving the expenditure of large sums of public money, asking for his guidance with regard to such expenditure, in view of the provisions of the Government's Agricultural Marketing Bill; and can he make a general statement upon the matter for the guidance of the local authorities concerned?

Dr. Addison: Representations, to which I gave careful consideration, have been made to me by one local authority who contemplated building a new market. I explained to that authority that if the Agricultural Marketing Bill becomes law, the initiative in the submission and administration of schemes will rest with the producers, and that it is, therefore, impossible to foretell the precise nature and effect of any schemes that may be submitted.

Mr. Blindell: Is the Minister of Agriculture able to say, for the guidance of this particular local authority, that he has no idea of substituting any system of marketing for the system now in operation with regard to the sale of fat cattle?

Dr. Addison: The hon. Member is well aware that proposals as to marketing arrangements do not rest with me.

Dogs (Exercise).

Mr. Freeman asked the Home Secretary whether his attention has been called to a recent case at Birmingham of ill-treatment to a dog, which had been so chained up that its muscles were partially atrophied and it had to be killed at once; whether he is aware that many dogs are kept similarly chained up without adequate exercise; and will he consider the desirability of issuing a circular to all local and police authorities calling attention to this matter, and urging the necessity of seeing that every dog is released at least once a day for adequate exercise?

Mr. Clynes: I have not seen a report of the case referred to, nor have I any information to suggest that similar cases are of common occurrence. I am afraid I do not see what good purpose could be served by issuing a circular as suggested in the question, as local and police authorities cannot be expected to attend to the daily exercising of dogs.

Significance of "pH."

Clinical Excerpts, the monthly journal, devoted to therapeutics, published by Bayer Products, Ltd., deals editorially with this matter in its April issue, as follows:—

"With the discreet implication that there may even yet be a few medical men to whom the significance of pH is still a mystery, we venture a few observations on this method of designating acidity and alkalinity.

"It is assumed that the acidity of a solution depends upon the relative proportion of acid (hydrogen) ions (H) over alkaline (hydroxyl) ions (OH), and that at neutrality the H-ion concentration is such that it equals the OH-ion concentration. (A common error is to suppose that neutrality means the H-ion concentration sinks to zero.)

"The reaction of a fluid, in other words, depends on the relative predominance of either the H ions or the OH ions, but it is expressed in terms of the H-ion concentration only. The letter 'p' placed before the H symbol means the 'power' of the H-ion concentration, and thus we have pH, followed by an index of that power, as pH_1 or pH_{10}.

"Just here is where confusion arises; it must be remembered that pH nomenclature (devised by Sörensen) is logarithmic and that these index numbers are *negative*—that is to say, pH_1 represents a *higher* hydrogen-ion concentration (greater acidity) than does pH_{10}. The neutral point, where the H ions balance the OH ions, is pH_7—a figure which should be memorised, although the method of its determination may conveniently be forgotten.

"The highest acid concentration, represented by pH_{00}, is that of normal hydrochloric acid; $pH_{0\cdot1}$ means that the acid is weaker, pH_1 is a decinormal acid, and so on until at pH_7 neutrality is reached, and at $pH_{7\cdot1}$ alkalinity. pH_{10} is a decinormal alkaline solution. $pH_{7\cdot45}$ is the hydrogen-ion concentration of the blood under physiological conditions —'perhaps one of the most constant things in nature.'

"As a simple mnemonic, we can remember that just as *acid* comes before *alkali* in alphabetical order, so with the pH the acid comes before the alkali in numerical order—the turning point being 7."

Multiple Cow Milker.

"In the agricultural industry more inventions perhaps are turned out annually than in any other. One of the latest devices, which, if generally adopted, will revolutionise the dairying industry, is called the Rotolactor, a huge cow-milking machine worked on a revolving circular-table principle," says the *Newcastle Journal*.

"This marvellous invention, similar in make to a merry-go-round, is 60-ft. in diameter, on which 50 cows are washed, dried, and milked while they make one complete revolution with the turn-table. The ingenious contrivance, whereby the cows are mechanically milked under these unusual circumstances, is being developed at the Walker-Gordon laboratories of the Borden Research Foundation at Plainsborough, New Jersey.

"Three times a day 1,680 cows are milked in this clean and sanitary manner. At the completion of each 12½-minute revolution each cow returns unguided to her place in the cow barn, an eighth of a mile away. By means of this equipment a degree of cleanliness and purity of milk never before attained is made possible."

Horse Society Meetings.

The National Horse Association of Great Britain.

At a recently-held meeting of the Council of this Association, the Report of the General Purposes Committee was submitted indicating that in respect of the proposed ban on horses in Oxford Street the Association had protested to the Minister of Transport and had asked that a deputation of societies and firms interested might be received. The Council felt that the restriction would not only be extremely detrimental to the hundreds of firms who still utilise horses for transport but would especially hit the poor trader with slender financial resources. They considered that elimination of horse-drawn transport invariably used for the haulage of goods in favour of vehicles largely engaged in pleasure was very detrimental to trade.

The Secretary reported that many other Societies had passed resolutions against the ban—the British Hay Traders' Association having made a strong protest. The saddlery trade had convened a large protest meeting at which over 100 saddlers were present, while the National Farmers' Union had informed the Minister of Transport that they supported the protest of the National Horse Association. A number of firms interested in Horse Transport had intimated that they would like to be represented on the Association's deputation to the Minister.

It was reported by several members of the Council that many accidents had occurred to horses and live stock generally owing to lorries proceeding at night along country roads with inadequate lights, *i.e.*, oil lamps. The Secretary was instructed to write to the Minister of Transport and invite him to ask that the Secretary of State for Home Affairs should draw the attention of the County Chief Constables to the fact that at night many lorries travelled at excessive speeds, contrary to the regulations for heavy motor vehicles as laid down in the Minister's Road Traffic Act, with consequent accidents.

The Secretary submitted the revised draft of the Highway Code which, after discussion, was considered satisfactory.

Sir John Moore reported that the quarterly calendar giving dates of the leading Agricultural and Horse Shows had been issued to members and others, while the demand for the publicity booklets was maintained. In view of this and observing that the existing articles and booklets on horse transport costs were still being issued at the rate of 1,000 per week, no new article would be prepared for the time being.

Annual General Meeting of Members.

Sir Archibald Weigall occupied the chair and, in proposing the adoption of the Report of the Council and Statement of Accounts, remarked that the Association had had a most active year and one rendered noteworthy by the fact that H.R.H. the Prince of Wales had honoured them with his patronage. There had also been a large increase in their membership. To ensure that nothing was promoted or effected against the interests of the horse or its use without through consideration being given thereto and adequate protest made, the Council had devoted considerable attention to Parliamentary Bills and had engaged the services of Parliamentary agents who would look through all Bills presented to Parliament—including the large number of Corporation Bills introduced annually.

The Chairman formally moved the election of Major-General Geoffrey H. A. White as President of the Association for the ensuing year, which proposal was adopted with acclamation.

Hunters' Improvement and National Light Horse Breeding Society.

At a meeting of the Council of the Hunters' Improvement Society, held on April 16th, Sir Walter Gilbey, Bart., was elected President of the Society for the ensuing year, with Major Gordon B. Foster, M.F.H., as Vice-President.

Shire Horse Society.

At a recently-held meeting of the Shire Horse Society, Mr. N. W. Smith-Carington, M.P., was installed as President of the Society, while Mr. Thomas Forshaw was formally elected as President-Elect, *i.e.*, President in 1932.

International Horse Show.

The twentieth International Horse Show will be held at Olympia from June 20th to 27th. This year the period of the show will be reduced from nine to seven days, and, as the prize schedule indicates, there will be a consequent reduction in the number of classes. In the elimination of classes care has been taken to avoid interference with the more popular events, and those which have been cancelled are classes which experience has shown have not been filled in recent years. There will be regret, however, that it has been found necessary to delete the military classes which included draught horses shown with G.S. wagons and officers' hunters.

There will be a total of 79 classes, compared with 103 last year. Harness ponies not exceeding 14 hands, which hitherto were shown in two classes, will be confined to one class, and the class for horses or ponies under 15 hands, driven by women, will be cancelled. Other harness classes which have been withdrawn are those for private road teams or military coaches and for horses regularly driven on the road. There are few privately-owned coaches in these days, and the regularly driven horse is also becoming rare. There will still remain 20 classes for harness horses and five for four-in-hands. The section for riding horses will include five classes for children, and the first and second prize-winners in these will be eligible to compete for the Belvoir Champion Cup. A class will be provided for boys' and girls' hunters, and there will be the usual novice and open hunter classes. Several amateur riding classes have been cancelled. A class will be provided for officers' chargers, and as in former years there will be competitions for polo ponies and police horses.

Horses for the Continent.

The Veterinary Inspector for the City states that there has been a tendency during the last few years towards a reduction in the number of horses exported to the Continent. Animals not suitable for shipment are slaughtered, and the carcasses sent over. During the past year 285 tons of horse-flesh (approximately 1,150 horses) were exported from the City to the Continent.—*City Press.*

Hunter Breeding.

As President of the Hunters' Improvement and National Light Horse Breeding Society, Sir Walter Gilbey has issued an appeal to hunting people of both sexes to assist in extending the brood-mare scheme initiated by the Society some years ago for the production of young hunter stock of high class.

At the present time 173 mares are available for this purpose, and the number might be much greater if the funds available for the purchase of suitable mares were increased by more people becoming members of the Society, and if those who hunt would present to the Society suitable mares which from various causes are incapacitated from further service in the hunting field.

Under existing conditions it is inevitable that a proportion of the horses bred annually are not of such a high standard as they should be, with the result that their breeders become disheartened and give up breeding; whereas, if the mares which produce inferior stock could be replaced by more suitable animals, foals of higher class could be bred with considerable profit to the breeders—a result greatly to be desired at all times, and especially in the present distressed condition of agriculture.

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

May 4.—Meetings of the Finance (3.30) and Editorial (4.30) Committees, N.V.M.A., at 2 Verulam Buildings, Gray's Inn, W.C.1.

May 7th.—Meeting of the Central Division, N.V.M.A., at 10, Red Lion Square, W.C.1.

May 8th.—Last day for nominations to Council R.C.V.S.

May 14th.—Meeting of the Midland Counties Division, N.V.M.A., at Kidderminster.

May 21st.—R.C.V.S. Voting Papers and Annual Report issued.

May 28th.—Last day for return of Voting Papers R.C.V.S. Council.

June 4th.—R.C.V.S. Annual General Meeting. Victoria Veterinary Benevolent Fund, Annual Meeting.

June 15th-20th.—D.V.S.M. Examinations.

July 2nd.—R.C.V.S. Annual Dinner.

Aug. 22nd-28th.—N.V.M.A. Congress at Norwich.

Norwich Congress.

The Railway Companies of Great Britain have agreed to allow members of the Association to travel to the Congress at the reduced rate of the ordinary single fare and a third for the double journey, **providing at least 100 members and their friends travel by rail.**

In order that this concession may be gained, members who wish to take advantage of this facility are requested to communicate with the General Secretary, N.V.M.A., 2, Verulam Buildings, Gray's Inn, W.C.1, as soon as possible, stating the number of tickets they will require. Should it be found that the requisite guarantee as to numbers can be given, vouchers will be forwarded immediately.

The reduced rate will apply from all stations in Great Britain and from Irish ports by railway-owned steamers, and by the boats of the Belfast Steamship, British and Irish Steam Packet and the City of Cork Steam Packet Companies and of Messrs. Burns and Laird Lines, Ltd.

Telephone Numbers of Members, N.V.M.A.

It has been decided by Council, N.V.M.A., to insert telephone numbers in the List of Members of the Association, published yearly in the Congress Handbook. Members are accordingly requested to forward this information without delay, to the General Secretary, N.V.M.A., 2, Verulam Buildings, Gray's Inn, W.C.1.

R.C.V.S. Council Election.

The last day for nominations for election to the Council of the R.C.V.S. is Thursday, May 7th.

The retiring members, all of whom have already been nominated for re-election, are :—Bradley, Dr. O. Charnock, Craig, Professor J. F., Gaiger, Professor S. H., Holroyd, Mr. J., McIntosh, Mr. J. W., Male, Mr. G. P., Whitehouse, Professor A. W., and Young, Colonel T. Dunlop.

Further nominations, on forms to be obtained from the Secretary of the College, may be received up to Thursday next. If no further nominations are received it will not be necessary to take a ballot.

Veterinary Colleges and the "Record."

With a view to making the *Veterinary Record* more readily available to students, the Editorial Committee, N.V.M.A., has decided that, commencing with the current issue, the Veterinary Colleges affiliated to the Royal College of Veterinary Surgeons, shall be supplied with one free copy of the *Veterinary Record* for approximately every 50 students.

It is hoped thereby to enable all students to have easy access to the Association's journal, which appears to have been impossible under the former method of allocating one free copy to each college.

Personal.

Mr. H. J. Dawes.—We greatly regret to learn that the Hon. Secretary, N.V.M.A., is making but slow recovery from the attack of influenza which prevented his attendance at the April Meeting of Council. We sincerely hope that the change of air which Dr. Dawes is about to enjoy, will bring about his complete restoration to health at an early date.

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Member's Municipal Success.—We congratulate Mr. E. P. Offord, M.R.C.V.S., of Barnet, on his election, for a second period of three years, to the Barnet Urban District Council. Upon the former occasion Mr. Offord headed the poll with 996 votes; this year he came second with 995 votes.

Istizin: A Correction.

Mr. Richard Hudson, of Retford, writes :—

"With reference to my remarks about Istizin and the possibility of hæmaturia following its use, I have received a communication from Bayer Products, Limited, pointing out that the red colour is not due to blood but to a harmless colouring matter."

Army Veterinary Service.

Movements of Officers.

Major E. S. W. Peatt, O.B.E., is at present on leave ex India until June 8th inclusive; he joins the Aldershot Command for duty on June 9th, on reversion to the British Establishment.

Major A. J. Kelly and Captain J. S. Kingston are at present on leave in this country from India.

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London Gazette—War Office—Regular Army.

April 24th.—Major F. C. O'Rorke, C.M.G., F.R.C.V.S., to be Lieut.-Colonel (March 22nd).

The following officer has vacated his appointment in India :—

D.A.D.V.S.—Major H. Kirby, D.S.O., R.A.V.C. (January 31st, 1929).

R.A.V.C. Golfing Society, 1931 Meeting.

The Annual Meeting of the Society will be held at North Hants Golf Club, Fleet, on May 20th and 21st, 1931, commencing at 10 a.m.

Programme of Events.

1st Day.—Morning (*a*) Eighteen holes Singles (medal play). Scratch for R.A.V.C. Challenge Cup. (No sweepstake).

(*b*) Eighteen holes Singles (medal play) under handicap for R.A.V.C. Founder's Cup. (Sweepstake 2s. 6d. optional.)

These two events will be competed for simultaneously.

Afternoon.—Eighteen holes (medal play) foursome under handicap, for a prize value two guineas. (Sweepstake 2s. 6d. optional.)

2nd Day.—Morning. Eighteen holes Singles play under Handicap *v.* Bogey for a Cup presented by the Captain of the Society (Major G. T. T. Jackson). (Sweepstake 2s. 6d. optional.)

Afternoon.—Eighteen holes foursome play under Handicap *v.* Bogey for a prize value two guineas. (Sweepstake 2s. 6d. optional.)

The Annual General Meeting will be held in the Club House at the close of the first day's play.

Members are requested to notify the Hon. Secretary of the Society: c/o Station Veterinary Hospital, Aldershot, as early as possible:—

(*a*) Whether it is their intention to be present at the meeting, to enable the necessary arrangements *re* meals, etc., to be made.

(*b*) Their lowest club handicap.

(*c*) Whether they want caddies.

Inspection of Cattle in Gloucestershire.

Reports were presented to the Gloucestershire Agricultural Committee recently from the county veterinary inspectors upon the general inspection of dairy cattle for the first half of the year 1930-31. These showed that the number of animals examined was 44,164, of which the number suspected to be suffering from any of the diseases specified in the Tuberculosis Orders of the Milk and Dairies Act and Order was 292, or only ·66 per cent.

The inspection showed as usual a much bigger proportion of diseased cattle in the districts on the borders than in the interior districts of the county, thus emphasising the opinion previously expressed by the Committee that their general inspection would be much more valuable if a similar inspection were carried out by neighbouring counties. They accordingly renewed their previous representations to the County Councils Association and the Ministry of Health that a general inspection of dairy cattle throughout the country should be compulsory.

The Ministry of Health had replied that they were considering the question in connection with other relative matters. The subject had also been considered by the Executive Council of the County Councils' Association, but the Executive Council of the Association had decided that they would not be justified in recommending the adoption at the present time of a system of routine inspection of dairy cattle in every area.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Veterinary Surgeons and Canine Societies.

To the Editor of The Veterinary Record.

Sir,—The incident which inspired Major Kirk's letter in your issue of the 18th inst., leads to the question of the appointment as Honorary Veterinary Surgeon to canine societies. For many years I have opposed such appointments, except in the case of shows for charitable purposes.

While our members fall over each other in their efforts to acquire this cheap form of advertisement, in the hope of *kudos*, and more business, the canine societies will exploit us and at the same time laugh at us for our stupidity in this respect. I submit that the appointment of veterinary surgeon to a canine society should be a paid one, and that the "National" should veto the present practice, which, in my view, is *infra dignitatem* and should come under the heading of unprofessional conduct.

I am, Sir,
Faithfully yours,
Reg. F. Wall.

128, Queen's Road,
Bayswater,
London, W.2.
April 21st, 1931.

The Writing of Prescriptions for Clients.

To the Editor of The Veterinary Record.

Sir,—From time to time one hears made the suggestion to suppress the publication of prescriptions in the professional journals with a view to preventing their exploitation by the lay public.

It is doubtful, however, whether or no the damage inflicted on veterinary practitioners by this means is not greatly exceeded by that resulting from the practice of writing prescriptions for clients, instead of dispensing themselves, indulged in by some practitioners, often men of good professional standing.

Only a few days ago I was called in to attend a case, surgically, for a new client at a distance. When I enquired of him who was his usual veterinary attendant he replied: "I never call in a veterinary surgeon except to perform an operation, as I have suitable prescriptions for all medical cases." I naturally thought he was referring to some text-book but, on my arrival, this gentleman showed me a whole file of prescriptions, many of which had not been given to him personally but passed on to him by other dog owners. Each prescription had an accompanying slip upon which were noted the symptoms for which it was issued.

In conversation he remarked that "Mr. So and So" charged him a guinea for one visit *and a prescription* but he did not mind that, as he used the same prescription over and over again!

Whilst this practice may suit the pocket and disposition of some of our professional brethen, it not only deprives others of fees but is a short-sighted policy from even the prescriber's point of view, as he himself is a loser in the long run through the repetition of his prescriptions. Moreover, effective every-day prescriptions often find their way into the hands of enterprising dispensing chemists who do not fail to exploit and advertise them. One such chemist has been making a good living for the past 22 years out of a prescription I was foolish enough to write for a distant client in order to avoid the trouble of dispensing and posting medicine to him. Indeed, any dispensing chemist in a big way can tell of the way consultants' prescriptions are passed on from hand to hand.

Faithfully yours,
David Eric Wilkinson.

Oakwood,
Chigwell,
Essex.
April 26th, 1931.

Royal (Dick) Veterinary College.

To the Editor of The Veterinary Record.

Sir,—In his valuable Retrospect in your current issue, I notice that Major Hamilton Kirk says that this College *was* in need of about £30,000 for extension of the buildings. Unhappily, to be accurate, the tense should be changed to the present. It would be a pity were any potentially generous reader of the *Record* to imagine that a deserving outlet for his (or her) generosity has been closed. I can assure any such person that this is not so and that donations will still be most gratefully accepted.

Yours faithfully,
O. Charnock Bradley.

Royal (Dick) Veterinary College,
Edinburgh.
April 27th, 1931.

The Editor acknowledges the receipt of the following:—

Communications from Mr. Ll. E. W. Bevan (S. Rhodesia), Mr. George Dykes (Glasgow), Mr. C. A. McGaughey (Manchester), Capt. A. W. Noel Pillers (Liverpool) and Colonel G. K. Walker (Abingdon).